EARTH-TEC JORUNE™

SKYREALMS

Earth-Tec and Bio-Tec of the 22nd Century

Technology From a Distant Time and a Forgotten Place

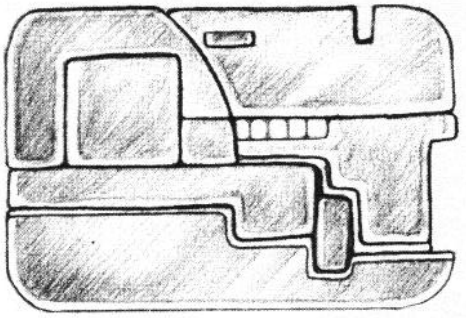
EARTH-TEC

JORUNE

FOREWORD

EARTH-TEC JORUNE is an overview of the technology brought to Jorune by the Earth colonists who "Settled" the planet thousands of years before. The book starts with listings of Earth-Tec companies and then describes the wealth of Earth-Tec items and Bio-Tec creatures found on the planet. Although not a complete compendium, There's no better a source for information about Earth-Tec and Bio-Tec on Jorune.

THE STAFF OF
SKYREALMS PUBLISHING



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Contents based on SkyRealms of Jorune™
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SkyRealms Publishing Inc.
PO Box 5543
Berkeley CA 94705

1st Printing, August 1988 in the USA

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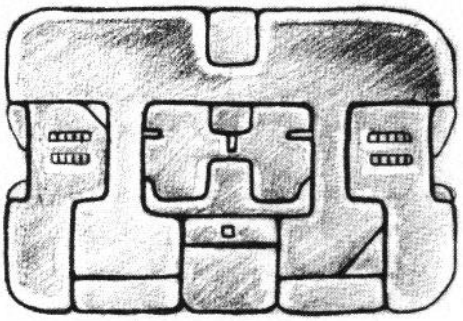

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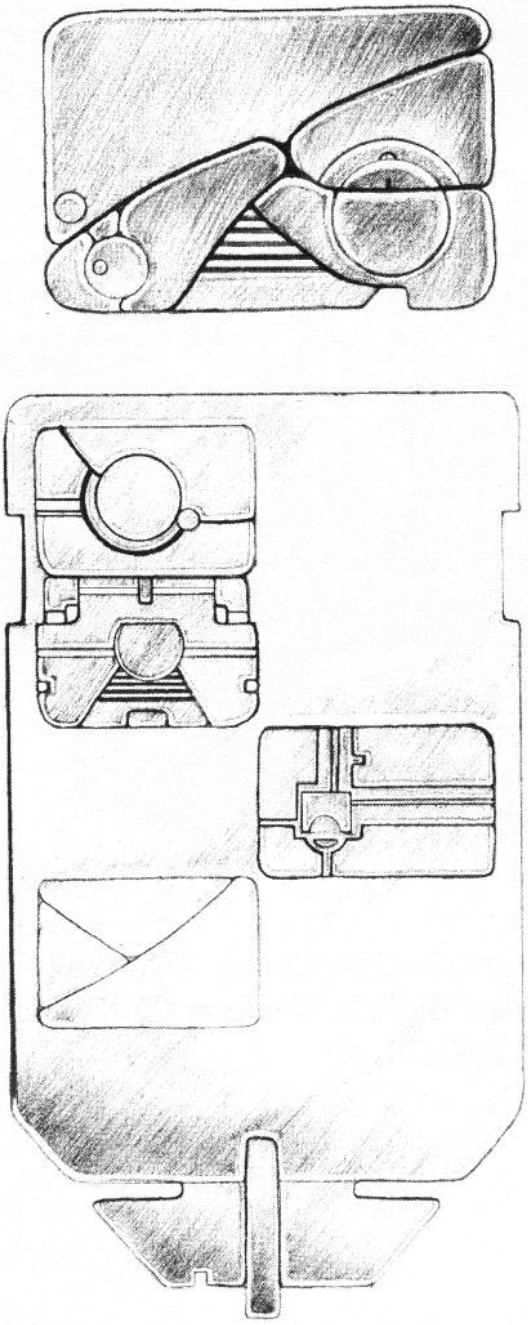
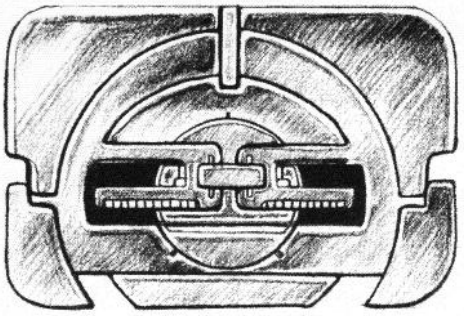


Challisks

Top: Individual challisk engraved by laser torch with copra.
Below: Plate with mounted challisks ready to hang in the Hall of Drenn

Challisks are made from pieces of the ancient Earth-colony ships. The exterior hull-plates are collected and brought to Ardoth where they are sold to tauther seeking Drennship.



CHAPTER 1

INTRODUCTION

A BRIEF HISTORY OF JORUNE

In the Earth year 2116, interstellar travel had become a reality. New technology had paved the way for the first large-scale colonization of another planet. Unmanned probes made the selection: a planet with a gravity and atmosphere similar to our own, a planet lush and seemingly hospitable. The probes brought no information about the planet's inhabitants, but general opinion among the colony planners was that any otherworldly contact, should it occur, would most probably be benign. The colony was equipped with much research equipment, and some weaponry, although the role of the military technology was downplayed.

The first colonists to explore Jorune contacted many races; most were not apparently highly developed. The most advanced race, the shanthas, showed little interest in the humans who made contact. They made it clear that they expected the colonists to respect certain boundaries in their eagerness to build and explore.

When the eighty main colony sites were finally completed, more than 20,000 humans had come to Jorune. They expected that the majority of their supplies would come regularly on shuttles from Earth. As the colonists settled in, catastrophic war broke out on Earth.

The colonists on Jorune were quick to comprehend the desperation of their situation. The supply ships they had counted on would never arrive.

The frantic colonists ignored the shanthic restrictions. They needed raw materials now that Earth supplies would be unavailable. They began to clear native Jorune vegetation. They began mining operations on lands forbidden to them. The shanthas sent an emissary to warn the humans to cease their transgressions. But the humans ignored the emissary, as the shanthas had yet to demonstrate any technology equal to the defenses of the Earth colonists.

The colonists sadly underestimated their hosts. Soon after humans started refining ore from shanthic lands, a wave of attacks employing energies of nearly nuclear proportions were launched against each of the eighty colony settlements. Thousands of humans were killed. In quick retaliation, the colony released biological warfare agents into the upper atmosphere. They were quite successful; over 99% of the shanthas died, leaving only thousands of a once populous race.

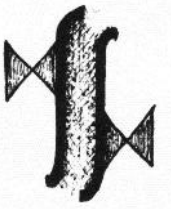
Communication between colony sites was destroyed. It appeared that the shanthas had focused their destructive energies on all uses of technology. Tools and weapons were abandoned by humans, who sealed them into caches they hoped to open when it became safe to do so.

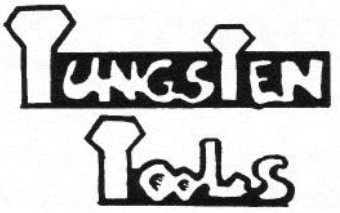
Thousands of years have passed between the time of the human/shanthic war and present-day Jorune. Only now are the humans, forced through the past millennia to recreate their societies, finally finding the wealth of power left to them by their ancestors.

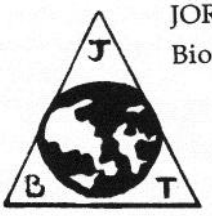
HISTORY AND CONTROL OF EARTH-TEC ON JORUNE:

After the Earth colonists abandoned their technology, it was 3500 years before humans were to regain the feel for what tools so advanced had to offer. The first samples of Earth-Tec were discovered in caches by the Dharsage (with the help of the Thriddle), and were soon put to use in the Energy Weapons War. This sudden imbalance of power between the human and all other races was finally minimized in the year 3445 P.C., when the Accord of Klein Khodre established the Council of Ten, and the human government in Ardoth was forced to restrain its imperialistic tendencies. Since that time, items of technology have continued to turn up. The Burdothian government has expended a good deal of its resources in an effort to control and study the old Earth technology. Some items are publicly displayed in Ardoth, as the Dharsage proudly reminds its citizens of the power wielded there. Many items have been secreted away as different plots unfold between nations and races. Earth-Tec remains uncommon and is always a sign of prestige for its owner --- unless the coveted items are needed or wanted by the government, unlicensed by a non-drenn user, or under the watchful eye of some other not-so-well-meaning agent of any number of causes, mercenaries not excluded.

Larquark Enterprises





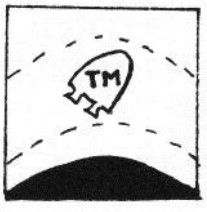


JORUNE
Bio-Tec

BLANSIPH
MINING

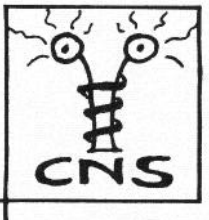
SUNRISE
To Orbit

TEXAS
Manufacturing



REPLICIN'S
KINDERPODS

Converging
Neural
Systems



Replicin's
Kinderpods

CIVILIAN
DEFENSE
SYSTEMS

ENCOMPASS

CORPORATE EARTH IN 2144

A large number of multi-national corporations were involved with the Jorune expedition. Each competed for a stake in the expected huge profits to be made. Contracts were bid out for among other things: shelters, weapons, propulsive drive technology, medical supplies, robotics, and computer systems. The following are descriptions of several of these companies.

Ambix Technologies: Producers of outdoor gear and zero-gravity goods. Located in Huston, Texas.

Androt: Tec-Ton manufacturers. Makers of the secton and other small robots.

Asia Supplies: Makers of portable power supplies and other accessories. Their version of the HPP and Sargus are considered the best.

Astromed: Producers of medical robots brought to Jorune.

Atmospheric Unlimited: Manufacturers of atmospheric suits.

Biots Unlimited: Manufacturers of quarks for the Jorune Expedition.

Blansiph Mining: A relatively new company at the time bids went out, Blansiph was located in New Delhi, where it was awarded the starcraft shielding contract under shady circumstances.

Civilian Defense Systems: Contract awarded for Jorune Expedition weapons and later turned over to RTC.

Companion Co.: Makers of artificial intellects. Located in Boston.

Converging Neural Systems (CNS): Makers of the central cortex. Jeane Karrolson and Peter Hermator founded the company on the idea that if you could make a computer mad at you, you could get it to think out its plan of defense and counter attack. These principles led to the development of their famed `Hermator Central Cortex' used in every tec-ton and sophisticated computer that was on the market.

Encompass: One of the largest conglomerate powers in the world. They got their start in fusion plants and spread out by owning and controlling more than 30 other small companies. They fumbled the bid to work on the weapon systems that would be taken to Jorune, and had to pass the work to RTC.

HAAL: One of the major computer manufacturers of the 22nd century. They eclipsed other manufacturers by building the first high volume assembly plants in space, allow them higher density and lower defect rates than competitors could match for the dollar.

Jorune Bio-Tec (JBT): The largest and most prestigious Bio-Tec company ever built. The company was previously called BTP, or Bio-Tec Projects, until they changed their name to cash in on all the positive publicity that the Jorune expedition was getting. Iscin, the research scientist who later created the Bio-Tec races was a JBT employee on Earth until he was promoted to the `Jorune Plant Team.'

Kubo: Leaders in communication and quality control.

Larquark Enterprises: A Berkeley company. Makers of the hottest subtronic interfusers. Larquark parts were insisted upon in the construction of all of RTC weapons.

Limsing: A pharmaceutical manufacturer.

Managing Memories: Masters of the memory market. Their prices are higher than those of competing memory suppliers although they sell more computer memory systems than any other two companies combined.

Quadrants Unlimited (QU = kew): Makers of the stardrive that brought the colony to Jorune.

Quek: Makers of pharmaceuticals

Recreation Specialists (RS = Riss): Makers of recreational sporting goods.

Replicin's Kinderpods: Main competitors of JBT (Jorune Bio-Tec). The creators of the kinderpod, to which they own the name. Incupod is the generic name used. Kinderpods were supposed to be the best for reproducing cork life. We know better now. Thirty-five hundred years of mutation and evolution on Jorune has made them a mess. Penalize the number of defects roll for kinderpods by 25 points. When rolling for the specific defects of a genon hatched from a Replicin's Kinderpod, add or subtract up to 10 points if that will make the defect `vicious.'

RTC: Rieker, Thorne, and Chular: A weapons research company formed by three ex-Encompass employees who wished to pursue their weapon designs further than their former administration would allow. Thorne and Chular graduated Berkeley in 2108, where they had been friends with Kevin Matglaf, future founder of Larquark Enterprises.

Silex upon Eton: Located in London, this Bio-Tec engineering company produced many of the tools and machines used for basic biological research. Their invert genetic splicers paved the way in the early 22st century for some of the more sophisticated bio-tec projects. The Bio-Tec scientist Iscin, and other JBT employees were die-hard Silex users. All of the Bio-Tec races created by Iscin were designed on the Silex6000 after the destruction of the colony.

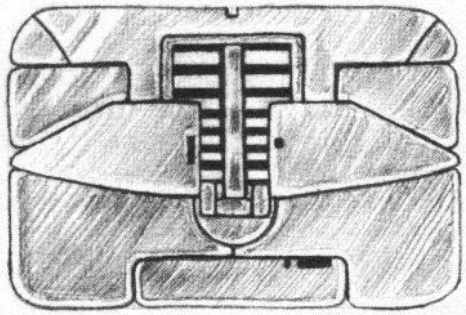
Sunrise: The builders of shuttles used to enter and exit the atmosphere. Sunrise won the bid to produce a large number of shuttles for the Jorune Expeditions.

Texas Manufacturing: Makers of low orbit/high orbit tugs. They brought shuttles down from geo-sync to low Jorune Orbit, and then back up again. Two of their tugs mysteriously exploded in their first year over Jorune.

The Strenner Forges: This New Jersey based company manufactured weapons and heavy equipment. They were makers of some of the Jorune Expedition's largest tec-tons, including the trailblazer and the combatton.

Tungsten Tools: Makers of laser tools, diagnostic and measuring devices. Their reputation on Earth was tarnished when scandal broke over their bid on the Jorune Colony optical scanners for tec-tons. Those close to the subsequent investigation made allegations that corners had been cut on the fabrication of the optic responders, and that they would blind prematurely. Thirty-five hundred years later the claims of these investigators have proved worthy. Most of the tec-ton optical systems made by TT fell out of order early in the first millennia.

Zoitec: Makers of laser weapons.



CHAPTER 2
EARTH - TEC

Earth's main areas of technological advance at the time of the Jorune colony were in eight areas: cryogenics, power sources, subtronics, weaponry, robotics, medicine, propulsion, and biological technology, or Bio-Tec. The following sections detail the first six categories, describing items of each technology, and then a section for miscellaneous devices.

CRYOGENICS

Cryogenics is the process of preserving an object or creature at a low temperature for the purpose of preserving it, measuring some aspect of it, or inducing desirable behavior in it. Creatures and objects alike can be kept in cryogenic suspension for periods of thousands of years with little or no deterioration. Almost everything brought to Jorune from Earth was stored in cryo-bins during the long voyage. Most colonists were brought out of their suspended state only after arriving on the planet's surface. In the same way, most supplies brought to Jorune were kept in a frozen state until needed. Insulating technologies in the 22nd century had advanced to the point where this technique was highly effective and inexpensive.

CRYO-BINS

Cryo-bins are large, squat drums measuring 5 meters in diameter by 3 meters in depth. Their exteriors are impervious to all but direct fire from heavy weapons. Just inside the skin of the bin are tens of thousands of thin molecular coatings that serve as insulating shields against heat. Cylindrical and radiating rings of liquid nitrogen keep the interior cooled to approximately -70 Celsius, cold enough to neutralize most molecular activity. Liquid helium is distributed throughout the cryo-bin to keep the liquid nitrogen cold.

The dimensions listed are those for cryo-bins containing parts, supplies, and items - the most common usages for cryo-bins. Other varieties are larger. For example, those that transport people in a cryogenic state are (5m x 3m x 3m), and those used to preserve robots and transport vehicles are (6m x 6m x 4m). Although their interior geometries differ, they all operate in the same fashion. Really large items (anything larger than the 1.5 meter portal exit to a cryo-bin) can only be removed by activating its 300KRS (described below) and removing sections of front and top paneling.

Entry by Person

Cryo-bins can be opened in three ways. The first is by attaching a `porta-vac entry system' to the 1.5 meter entry hole on the top of the drum. After this 8kg device mates with the cryo-bin, all liquid freezing agents are pumped into storage tanks for subsequent dumping back into the core upon its closure. It takes 1 minute before the
super-cooled chamber can be opened; entry for living creatures is limited to stepping into the freezing core and activating chamber studs which open small compartments in the bin. This is tricky at best and even dangerous for untrained personnel as skin bonds immediately when touching exposed metal surfaces in a cryo-bin. Plevlar gloves provide sufficient insulation, although a good set of leather gloves or mittens will do. Reduce stamina by 1 point for every minute spent standing in a cryo-bin chamber due to crystallization of the lungs and poor circulation brought about through rapid freezing. Frostbite will set in after 10 minutes. Although it is contrary to intuition, direct contact with the super-cooled fluids does not cause damage and freezing unless contact is sustained for at least a few moments. Malfunctions in cryo-bin fluid pumps have caused more scares than deaths. The porta-vac entry chamber is described in greater detail below.

Greater access into a cryo-bin requires the opening of access hatchways near the floor. They are barely large enough to give an average sized man room to negotiate them. These passageways were intended for small robots, not humans. They lead to other small compartments where other supplies and goods are stored. To gain general entry into a cryo-bin, the entire device must be restored to room temperature, as described later.

Entry by Dwebis

The intended method of object removal from a cryo-bin was through a small, awkward looking robot called a `dwebis,' which crawls into cryo-bin chambers, maneuvering easily in sub-zero temperatures. The main purpose of these robotic devices was to maintain starcraft over their long journey to Jorune. Once the colonies landed, they were fitted with cryo-bin entry attachment limbs and set to work emptying containers on an as-needed basis. The dwebis is described in greater detail in the robotics section.

Entry by 300KRS

The third method of gaining entry into a cryo-bin is by activating its `300K Return Sequencer,' or 300KRS. This electronic system within the cryo-bin brings the entire device back to room temperature. Technicians would be ordered to `bring it to 300.' Three hundred degrees on the Kelvin temperature scale is approximately room temperature. Each cryo-bin has a 6 digit combination required to activate the 300KRS. The time needed to return to room temperature is one 24 hour period, but because days on Jorune are longer than those on Earth, this process takes a little less than one day. When the system has completed its warm-up process, the exterior paneling of the cryo-bin can be removed, giving access to the entire interior.

To override the safety mechanism that controls the expulsion of super-cooled liquids that have been carefully maintained just above absolute zero requires an additional 6 digits to the 300KRS code. The return time is then cut to 1 hour, but cold gasses and fluids will stream from the chamber during this time. Random globs of such fluid will inflict 1D6 Stamina

damage to any creature hit if a roll against Agility is not made. A successful roll indicates that the correct wild arm-waving motions were made that prevented prolonged contact with the skin. Note that fluids of this nature will easily penetrate four or five layers of clothing and dribble out a person's pant legs.

Finally, and for emergency purposes only, there is a 300KRS initiation mode that causes the return to take place within 1 minute. This process requires an additional 4 digit code and the activation of 4 equidistant pin-ring-studs inside the cryo-bin's chamber, just inside the entrance. Thirty seconds later the entire cryo-bin will undergo a violent expulsion of all coolant, causing explosions and severe buckling. Huge chunks of the cryo-bin's exterior will fly off with destructive force (treat as mace damage with a Attack modifier of +4 to anything within 7 meters that fails to roll successfully against Agility). When the process is over one minute later, the remains of the cryo-bin will be highly accessible. Panels will snap off easily, cutting total dismantling time to less than 10 minutes. There is no danger from the cold after the process is over. Unfortunately, the cryo-bin will be rendered permanently useless. The power necessary to perform the 300KRS is stored in the cryo-bin from the day it is first activated.

PORTA-VAC ENTRY SYSTEM

Cost: 150gl Avail: XR Power: P-cell

A porta-vac entry system, as described above, weighs approximately 8kg (17 pounds) and is shaped like a tire with steel edges. It fits into sockets at the entrance to the cryo-bin chamber and activates the cryo-bin fluid pumps that remove coolant from the access chamber. Once the chamber is empty, it opens the steel iris that keeps the cryo-bin sealed, and then keeps the cryo-bin at its operating temperature while a user or dwebis accesses the interior. A porta-vac entry system will operate for 10 hours of cryo-bin access. Its power is used keeping the cryo-bin cold while its chamber is open and opening the chamber's iris-like opening.

PLEVLAR GLOVES

Cost: 15gl Avail: Rare Power: -

Plevlar gloves can be found in most installations where cryo-bins are located. They are little more than insulating gloves that extend to the elbows. Those wearing these gloves can plunge their arms into a liquid nitrogen bath without feeling any cold. This is a useful and necessary task for Iscin repairing Earth-Tec. Note: it is not advisable to submerge an entire blaster (loaded and powered up) within a liquid nitrogen bath, plevlar gloves or no. See third paragraph under Weapons in this chapter.

POWER TECHNOLOGY

Power sources come in three types: Power plants, portable piles, and power cells. Power plants are large, immobile generating stations. Portable piles are usually very heavy, but still produce considerable power. Power cells refer to all portable energy packs that can be recharged.

The word 'pile' is used to describe any Earth-Tec device that produces or delivers power. The term comes from Earth's resurgent use of the battery terminology of the late 19th century when a pile of chemical cells were stacked upon each other to generate electric current.

The terms used to describe each pile are simple, but the words are abbreviated for the sake of space in each description. As an example, here are the specifications of one type of pile, called a Sargus:

Sargus

Output:Sec(2)Total(80,000) Number Built: 239/107

Output: Sec() Total() Two numbers are listed inside parenthesis. The first number tells how many seconds of output are needed to generate the energy of one power cell (power cells are small portable energy packs placed in items and weapons). The number 2 in the example above means that it takes a Sargus Pile two seconds to produce the energy of a power cell, or that each second it produces 1/2 of a power cell's energy. This does not mean that power cells can be dropped in and recharged (Special devices are required to recharge power cells).

The second number in parenthesis is the total energy available in power cells. Some power producing plants have no such listing because they will essentially never run out of power. In the above example, the Sargus Pile has, stored within it, the energy of 80,000 power cells. Because it can let off this energy no faster than 1 power cell every 2 seconds, it will take 160,000 seconds, or about 2 days of continuous use to drain a Sargus Pile.

The power stored in one power cell is equal to 500KJ (kilo-joules). For power cells of all varieties, the second number is the number of seconds, not days that the power can be maintained. To get an idea of how much energy that is, the average home uses 1KJ (1 kilo-joule is 1000 joules) of energy every second.

Number Built: Two numbers. The first is the number of piles of this type that were built on Jorune. The second number is the estimated number of such piles presumed to still be functioning.

POWER PLANTS

Power plants are usually housed in buildings, or are buildings themselves. They produce a tremendous amount of power for colony sites through underground lines that extend as far as hundreds of miles. These shielded cables were buried deep beneath the ground on Jorune and employed a non-degenerative superconducting technology. They offer no resistance to current and produce no heat.

It was important that each colony site on Jorune be equipped with several sources capable of delivering power. The exact choice of which plants were installed where was often made through a tangle of bureaucratic, rather than scientific, decisions. Examples of all of the following types of plants can still be found on Jorune.

Sargus Pile:

Superconducting Remote Ground Source

Output: Sec(2) Total(80,000) Number Built: 239/107

These power receiving stations stored energy they received from several large plants. They were located in areas far from power plants where transports could stop to re-supply, or in areas where small research posts were being established. The Sargus would provide power until populations warranted the construction of a larger facility. Given their multiple inputs,

any number of the supplying stations could fail without jeopardizing the Sargus' ability to deliver power.

The energy in a Sargus is stored in an underground magnetic field maintained by superconducting magnets. Only the most minute fraction of the station's power is required to keep the field stable. For this reason, Sargus piles devoid of continuing input can deliver their reserve of power for thousands of years.

Sargus piles have been known to explode with considerable force when too large a load is attached to them. This means that there is a chance of either an underground explosion of the pile itself or a massive current overload in the device drawing the power from the Sargus if its power output is maintained for more than 1 minute. There are several Earth-Tec vehicles that would require this much power from a Sargus for full recharging.

A Sargus can be recognized as a cylindrical metal rim protruding from the ground approximately 2 feet high and 1 foot in diameter. The power-mate attachment to which an adapter can be threaded, rises to fill the cylinder and activates when its three control studs are pressed in a clockwise sequence. A typical Sargus that has survived to the year 35th century on Jorune will have 80% of its total energy in reserve, less if it has been used extensively.

HPP:

Huge Portable Pile

Output: Sec(10) Total(250,000) Number Built: 2000/981

The Huge Portable Pile, or `HPP' as it is called, weighs less than 700 pounds and occupies a volume less than 64 cubic feet. It is shaped like a dome with parallel holes on each side. Metal bars are placed through the holes to provide support for transporting it.

The HPP employs a slow fission source of uranium to generate electrical power. These piles are very reliable and can be controlled to ramp their energy output up or down from the average figure of 10 seconds. Any decrease in output power is allowed, but increases are limited to a factor of 4 (2.5 seconds per power cell). Increases in power output can only be sustained for periods up to one hour before the devices cooling system brings it down to a safe level.

There are several versions of the HPP that were created. Some look more gadgety than others, but all are essentially a big crate.

SUB-MESON PILE

Submerged Meson Energy Source

Output: Sec(.000025) Number Built: 14/6

Sub-meson Piles are underwater facilities that use seawater as their power source and as their coolant. They employ a complex muon generator that begins a fusion reaction at room temperature and sustains it at a high level contained within a magnetic bottle. The field is maintained by superconducting magnets and the power conversion is performed directly by charged particles escaping the reaction through inductive coils. They have a high internal reliability rate, but less than half of those created are still functioning due to underwater disturbances and earthquakes.

Several Sargus power stations will be located on shore near the underwater Sub-meson pile's location. There is typically no access to the power of a Sub-meson Pile from sea.

T-PILE

Tidal Energy Centers

Output: Sec(2 min) Number Built: 22/3

Tidal Energy Centers used the energy of waves to produce electric current. Although these power plants were well built, the pounding of waves for 3500 years has taken most of them out of service. Those that remain typically average 10 to 20 minutes time to produce the power of a power cell.

These centers are difficult to locate because shorelines have changed over the last 35 centuries. The tidal devices themselves are built into the sea-scape, while the part of the station that provides access is within 100 yards of shore. These stations are sometimes covered with sand or debris. It is rumored that salu now maintain the known existing stations for the dharsage.

P-PILE

Passive Collection Source

Output: Sec(3 min) Number Built: 111/86

Passive collection sources are solar cells that directly convert sunlight into electrical energy. They have excellent reliability although the buildup of dirt over time impedes their performance. Bio-Tec creatures called `sladregs' were created to eat away molds, dirt and debris that grow or collect on P-Piles. Unfortunately, most of the sladregs were wiped out in their 14th century on Jorune by a virus that killed them and left their rotting bodies as a green slime that stains most of the remaining P-Piles. There was a future resurgence of sladregs in the 31st century. This might be explained by the presence of a single sladreg cork (see the chapter on Bio-Tec for clarification) being incubated more than 1500 years after its creation. Although this is highly improbable, the population of these creatures has exploded, and P-Piles are growing cleaner by the decade. A tauther wishing to do Ardoth a favor might seek out a colony of sladregs for the purpose of transporting them to an anemic P-Pile. The power output listed here is for a clean P-Pile. Cut the power output down to 10% for dirty panels.

P-Piles look like large arrays of black panels mounted on sturdy metal stands. They were considered an eye-sore on Jorune as well as on Earth. P-Piles were located far from human populations on Jorune, but provided energy to the main grid and offered power access much as a Sargus piles does.

S-Pile

Slow Stable Pile

Output: Sec(2 min) Total(250,000) Number Built: 3400/1300

This pile is very similar to the HPP described above, but is considerably smaller. It weighs only 50 pounds, and occupies 1 cubic meter. Like the HPP, it employs a slow fission source, and like the HPP it comes in several near indistinguishable varieties, but unlike the HPP, its power output is not variable upwards, only downwards.

N-Pile

Neutrino Capture Converter

Output: Sec(10 minutes) Number Built: 2000/1590

An N-Pile is a neutrino capture converter. Build underground, these plants a very small but very steady current from the energy absorbed through neutrinos racing through space. The output is very steady and these plants are very reliable. More

than three quarters of all N-Piles built are still functioning. They are unfortunately, the most difficult of the power plants to locate. Most of the detailed maps of the N-Pile facilities are long lost. They were once recognizable by a bright red metallic stump that protruded out five feet from the ground. Most of these stumps have long since been covered with vegetation, and have lost their color and metallic gleam. The underground chamber for an N-Pile is large, but not complex. Their fabrication was easily automated by robots.

N-Piles are more likely to be found in desolate areas, or on the roadways of 3500 years ago. Trails and roads have changed greatly, so N-Pile hunts are rarely successful without some insider knowledge. Notes and sketchy maps of their locations can be bought in the bazaar.

Porta-Source

Superconducting Portable Pile

Output: Sec(2 sec) Total(25) Number Built: 600/550

This device is essentially a portable Sargus Pile. It can suck up the energy equivalent of 25 power cells, hold this energy for any period of time in a magnetic field, and the release the power at a tremendous rate of 2 seconds per power cell. This portable pile weighs 30kg, and is approximately 1 cubic meter in volume. These devices are very durable, and are ideal for situations where a lot of power is needed, but no power source is nearby. Note that a porta-source is more powerful than an HPP or an S-Pile, but does not create its own power.

POWER CELLS (ALL TYPES)

There are three types of cells: power cells, function cells, and attack cells. As a group they are commonly referred to as "power cells."

Power Cells

Output: Sec(5) Total(1) Number Built: 10,000

Power cells are the standard to which other cells are measured. One Power cell holds the equivalent of 500,000 Joules of energy, which it can yield in a matter of seconds. Power cells are most commonly used in weapons and small equipment. They weigh less than a pound and are bright blue. A power cell can expend its energy no more quickly than three seconds. All power cells are assumed to still be functioning.

Attack Cells

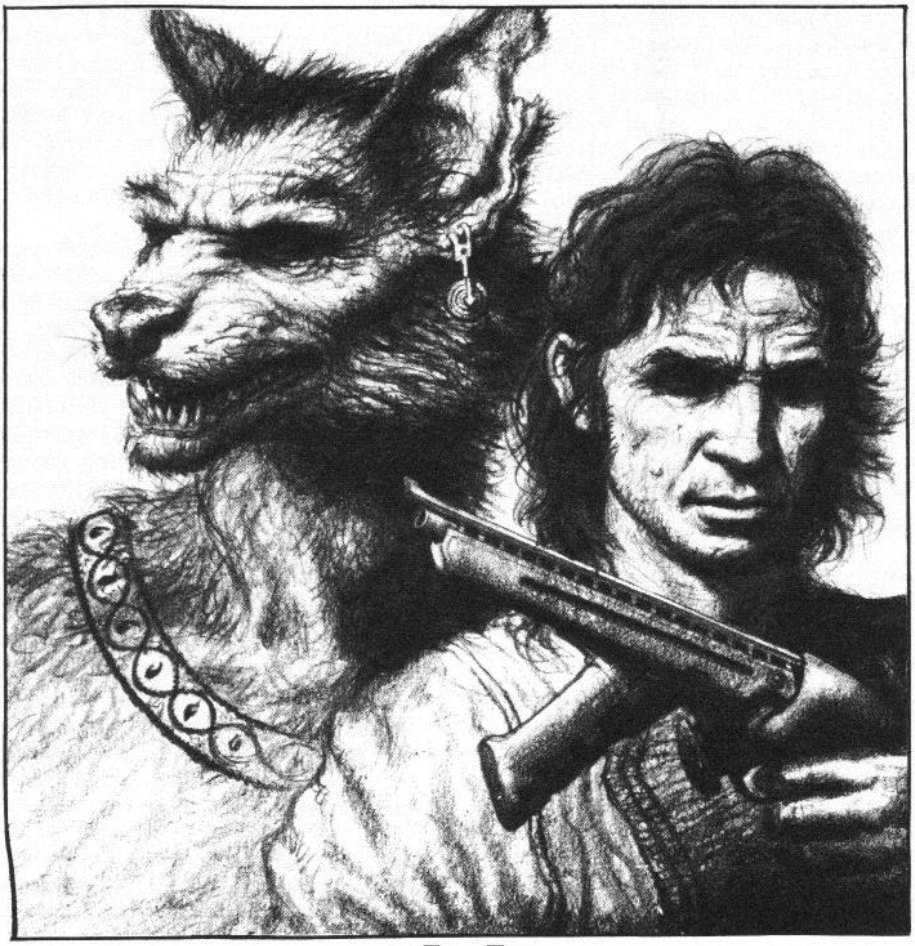
Output: Sec(5) Total(2) Number Built: 8,000

Attack cells are the cells of choice when combating with Earth-Tec weapons. An Attack Cell provides three times the total power capability of a regular power cell, which translates into more shots between reloading. Also, some weapons are able to take advantage of an attack cell's greater power output,and will operate more powerfully. All attack cells are assumed to still be functioning.

Function Cells

Output: Sec(100) Total(.1) Number Built: 75,000

A function cell is the weakest of the standard cells. It has a total energy of 1/10th of a power cell and can expend it no sooner than 100 seconds. It is ideal for lights, computer equipment, and other support hardware. Function cells are fairly common, and difficult to use up. All function cells are assumed to still be functioning.



SUBTRONICS

Subtronics is a technology resembling modern day electronics, but with components that operate at an even smaller level than modern VLSI computer circuits. Any device that requires power has several subtronic systems. The main component classes are: interfusers, harness systems, cortex control, and signal-emanation-reception systems.

Subtronic parts look like small globs of plastic with fiber-optic tendrils radiating into and out of them. They range in size between 5mm and 2cm.

Interfusers

Interfusers are optical communications and power delivery systems included in all Earth-Tec devices. Interfusers connect each of the major systems of a device, providing a conduit for information and power. Many parts have interfuser casings built around them to make their connection to other systems less difficult. There are a wide variety of interfuser types, each labeled with a letter. There are interfusers for every letter of the alphabet, except `f,' `g,' and `y.'

Interfusers can break if the harness system that provides power to them overloads (see below), or is under severe mechanical shock. In an extreme case, the energy output of a device can burn a hole clear through to its exterior.

Harness Systems

These subtronic devices regulate and control the distribution of power throughout a device. The harness system starts with the point of power input, usually the receptacle for a power cell of some sort. The energy from that cell is then channeled through the harness system to all other components through interfusers. If a harness system is destroyed or partially broken, there is a 25% chance that each interfuser it connects to will blow out. The harness system does not connect to anything by itself. It provides the regulation and control of energy and transmits this power through a network of interfusers.

Cortex Control

Computers and computer systems built out of Earth's subtronic technology grew to new levels of sophistication in the 22nd century. The arithmetic units which are the hearts of current computers became a secondary system to the central cortex, a subtronic mechanism that operates as a programmable analog computer capable of truly parallel processing. The central cortex performs all high level decision-making in computers, and controls behavior circuits in robots.

All subtronic cortex control systems include arithmetic logic units and memory systems. Removable memories are about the size of a quarter and are a light orange color.

SER-SYSTEMS

A Ser-System is a subtronic signal-emanation-reception device that receives and can transmit high-frequency signals. It is the heart of all communication gear brought to Jorune and is used extensively in large devices where interfusers would be impractical. A SER-system is about 1cm long.

TEC-TONS: ROBOTICS

Robotics was a hot technology at the time of the colony's journey to Earth. In the 75 years prior to the Jorune expedition, robots had become capable of human-like reasoning capabilities thanks to a company called CNS (Converging Neural Systems) and their development of the `Hermator Central Cortex.' In a short time, robots were being manufactured for functions previous performed exclusively by humans. Although this revelation was mainly one of computer technology, its application to vision, especially robotic vision, was revolutionary. As the robotic industry sprung into full manufacturing mode, new names became prevalent for these electro-mechanical marvels, `tec-ton' being the most accepted of these.

Manufacturing facilities for robots on Jorune had just begun at the time of the colony's demise, so most robots were those from Earth. Thirty-five hundred years later, most of these robots have fallen into disuse. Many are still roaming the forests, the jungles, the plains, and the mountains of Jorune, continuing their research. Over time they have all developed disabilities in one way or another, yet they still attempt the functions for which they were designed.

Before describing tec-tons in detail, a quick summary will cover each of their major systems, their possible motivations and mission objectives, and their possible defects.

Meeting a Tec-Ton

Tec-tons are very rare in the populated areas of Jorune. Those that were housed near the colony sites were sought after and destroyed by shanthas for hundreds of years after the colony's demise. Only those that were in desolate, isolated regions survived the shanthic onslaught. There are probably 500 tec-ton still in cryo-bins, thousands inoperative all over Jorune, and a few hundred still active and functioning.

Tec-ton encounters aren't stereotypical of a robot encounter. Some of these devices stand as high as 10 feet, and look totally alien. Few of the tec-ton manufactured take a human form, and in general, if they have no specific interest in a creature, they are likely to ignore it. Most tec-tons are automatronic robots that carry out research missions, and little else. Often, whatever personality they have is brought about through defects, not programming. Form an image of a huge, metallic being crashing through the forest, breaking branches and narrowly missing trees and small animals. Tec-ton encounters rarely take the form of, "Human, please take me to the nearest population center where I can blend in to the greater whole of a human society, assisting other life forms in whatever ways I can." Even robots that are multi-lingual and roughly humanoid are not overt in their friendliness. Their behavior is subject to change over time, and from experience they know the unproductive, potentially harmful effect they can have under the control of primitive humans. They will not, for example, kill other life forms on the whim of a human. Only under computer control will tec-tons change the basic tenets of their original programming.

Tec-tons that have survived on Jorune for 3500 years will have picked up several languages, including Entren, so languages usually are not a major stumbling block. However, the Iscin

races confuse tec-tons profoundly. Woffen, bronth, blount, crugar, and tologra are identified as intelligent, but it is up to each tec-ton to determine whether the creature is an injured human, or some new, previously uncategorized form of life.

It is desirable to use tec-tons sparingly in campaigns. Their presence can foil a master plan, be a stroke of fate, or be an intense and frightening encounter for those that think "It wants to receive our orders! Tell it to kill something for dinner." Ton-Krekka, the name given a plant reharvester in the East Trinnu Jungle Lands, has survived with a passion for 3500 years and has replanted several tauther who have come into the field of its somewhat imprecise vision. In the words of the famous drenn explorer, Danthro Krose, "In the wilderness, if it ain't cute, don't try to make friends with it."

Tec-Ton Systems

1. Exterior Support: The chassis, or body frame, of the tec-ton. Usually constructed out of one of the finer alloys that resists the elements, is very light, and can survive tremendous impact. These frames are also very resistant to heat and cold.

2. Structural: The structural system of a tec-ton is the internal support system that holds the skeleton together. Each of the other major systems are connected through the structural system: motivators, the neural system, etc.

3. Motion: The motion system includes the motivators with which the fluid systems transmit the power, and the power converters, which then change the hydraulic power into a more useful form of work. Every tec-ton has legs, wheels/treads, or a combination of both. On a paved surface, some tec-tons can travel at a high rate of speed, but in a hot, humid jungle, they are lucky to move at half the speed of a person.

4. Fine manipulation: Most tec-tons are able to finely manipulate objects in the real world. This is accomplished through hand or claw like mechanisms. Robotic fingers are made of electro-active polymers, whose extensions can be finely controlled by varying the electric charge put across them.

5. Sensing: Robotic systems are available to sense: light, sound, balance, touch, odor, electro-magnetic disturbances, sonic reflectivity changes, charge deviation, power level sensing, supply level sensing, and internal feedback of its operation and the status of internal repairs.

6. Logic & Knowledge: The logic systems include the central cortex, which makes all the tec-ton's high-level decisions, main memory, programming, a directives network, learning modules, its inheritance system, and a remote memory system.

7. Self-Repair: Tec-tons have internal self-repair mechanisms called `ets' that constantly roam through their interiors, fusing cracked surfaces, mending frayed wires, replacing the fibers of subtronic interfusers, and replacing malfunctioning components. Most tec-tons carry inside them a store of replacement parts, mainly subtronic, that have lasted some units through 3500 years of neglect.

8. Power Plant & Power-Mate: Every tec-ton has a Superconducting Magnetic Storage System, or SMSS that can hold the robot's power indefinitely. In normal use, a tec-ton uses up its power in about a month and needs to attach its power-mate to a power plant to recharge.

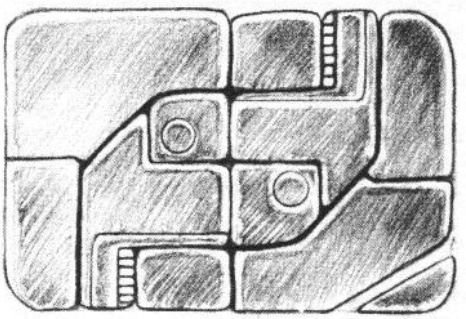
9. Functional Support Systems: These are the standard abilities or functions which all tec-tons can perform. All tec-tons have fluid banks for balance, restraint systems for deactivation, waste disposal and purge system for used and damaged parts, a communications system, and an inter-link system for direct contact with computers similarly equipped.

There are a number of mission specific support systems that each tec-ton may or many not have. They include:

Hybra-link: Hybra-links are armatures equipped with needles and scalpels for taking samples from biological specimens.
Tools: Mechanical devices and lasers are used for cutting, welding, bending, boring and trimming.
Detachable memories: Detachable memories make possible the extraction of robot memory and the inclusion of new information in the tec-ton. These memory cores are shaped like half spheres with square bases.
Human Supplies: Human usable supplies are sometimes carried if the tec-ton is expected to come in contact with people.
Tec-Ton Supplies: Additional part supplies are carried if repairs are expected over an extended period of time, or if the tec-ton is expected to engage in especially rugged activity.
Weapons and Defenses: Weapon and defense systems are carried by tec-tons on patrol missions.
Sensors: Mission sensors allow some tec-tons to test soil, test atmospheric conditions, perform detailed chemical analysis of substances under examination, etc.

Tec-Ton Motivations

Tec-tons gain their motivation from four sources:
1) Directives: These are basic, pre-programmed directives not subject to change. They include a form of the basic laws of robotics.
2) High level programming: Is not subject to change, but is different for every different model of tec-ton.
3) Inheritance: A tec-ton can pass part of its memory and motivations to another tec-ton if it is unable to complete its functions due to deactivation or major failure. Passage of the information is through inter-link or through detachable memories.
4) Learning Modules: A wide variety of learning modules were available at the time of the colony's demise on Jorune that gave tec-tons skills and knowledge outside their



pre-programmed areas. Examples include repair, languages, entertainment, security procedures, research skills.

The following is a list of possible motivations that a tec-ton might have when encountered:

Roll	Motivation
1 - 15	Power: It's time for this tec-ton to recharge. It has 3D6x3 hours before shutdown.
16 - 20	Retrieval of device: The tec-ton needs to find something.
21 - 35	Repair of self: The tec-ton may or may not need more than its own supplies to repair itself. Tec-tons remain motionless while repairs to their internal systems are in progress.
36 - 40	Repair of device: The tec-ton may need replacement parts for the device it is repairing.
41 - 60	Find inter-link station: The tec-ton is attempting to find a remote inter-link station. Some tec-tons now spend their entire existence attempting to find an active communications link because they receive nothing on their subtronic SER-system. They are attempting to report back to base for new instructions. The main computer systems that used to maintain all tec-ton communications are long since dead, but the optic networks are still functioning, making it possible for tec-tons to hold conversations with each other. No one on Jorune has understood the significance of this yet. If the main computers are ever brought back into service, most of the tec-tons could be given new programming.
61 - 65	Contact with sentient being: The tec-ton desires some form of contact with an intelligent creature, preferably a human. Scientific inquiry: The tec-ton is in the process of researching something.
66 - 70	Behavior: Studying the behavior of some creature.
71 - 73	Isho study: Studying Isho.
74 - 78	Geography: Creating maps.
79 - 85	Geology: Bore core samples and return them to a computer station.
86 - 97	Statistical surveys of life forms: count and examine different creatures.
98 - 100	Delivery of object or message to someone or to some location.

When a tec-ton encounters a creature it might do one of several things depending upon its current motivation.
1) Ask the creature for aid
2) Offer assistance
3) Follow the creature
4) Observe the creature
5) Ignore the creature

Only in the case of a severe malfunction will a tec-ton attempt to injure or in any way harm a human being. If they appear to have hostile motivations it is due to damage to their logic or a perception or misperception of the creature as hostile. Races other than human, muadra and boccord are more likely to be attacked in the case of severe tec-ton malfunction.

Tec-Ton Defects

Most tec-tons that survived 3500 years of life on Jorune are pretty beat up. There are more robots stored in cryo-bins, but until recently, no one had known where they were or how to open them. Tec-tons that are encountered are sure to have defects if they are original Jorune stock. Roll for D6 defects below:

Roll	Defect
	1) Motivation problems
1 - 4	a) Main motion: movement
5 - 7	b) Tendrils, arms, tactile digits
8 - 9	c) Swivels: hips, elbows, necks
10 - 11	d) Craning joints
12 - 14	e) Limited flexibility in joints
15 - 16	f) Overswing in joint
17	g) Joint triggers other join to move
18	2) Coordination is poor or jerky
19	3) Excessive power drain or short in a circuit
20	4) Inability to mate with power stations
21	5) Randomly shuts down
22	6) Breakdown of autorepair (tec-ton cannot repair itself)
	7) Senses
	a) Hearing
23 - 24	1> Low: can barely hear
25	2> Select frequency dropout: missing certain pitches.
26	3> Fast transforms inoperative: can't separate sounds out
27	4> Inability to adjust sensitivity: hears things too loud or too quiet.
	b) Sight
28 - 32	1> Dim: difficulty seeing
33 - 34	2>Inability to judge distance
35	3> Partial blindness in one or more eye (directional blindness)
36	4> inability to detect outlines
37	5> Poor color sense
38	6> Low resolution
39	7> Undulating response levels in optic responders: sees flashes and experiences drop-outs.
40	8> Cortex receives transformed images: It sees mainly garbage
41 - 43	9> Isomorphic transformations skewed: It mis-identifies objects.
44	c) Odor sensing is poor
45	d) Balance is off
46	e) Lack of internal feedback: It breaks itself
47 - 50	f) Poor touch sensitivity
51	g) Electromagnetic sensors give false readings
52	h) Power level sensor faulty
	8) Logic
53	a) Ignores or obsessive about self preservation
54	b) Errors understanding orders
55	c) Errors obeying orders completely
56	d) Disregards orders
57	e) Wanton disregard of orders
58	f) Ignores important stimulation
59	g) Shuts down upon certain stimulation: sights, sounds.
60	h) Incorrect mode responses: attack for help, move for talk, etc.
61	i) Ignores its power needs

62 - 65	j) Power level illogic: keeps recharging
66 - 68	k) Human protection directive disrupted: will hurt humans
69 - 73	l) Treaty and zone control directives disrupted: will wander out of its prescribed area
74 - 77	m) Searches for recon response signal RRS: always trying to receive Ser-system transmissions.
78 - 79	n) Technology directives disrupted: confiscates Earth-Tec
80	o) Translating capability perverted: misunderstands language
81	p) Error in ALU: math errors will effect most operations
82	q) Judgment: makes errors in judgment
83	r) Internal pain responders defective: can't detect its state
84	s) Impatient for information: aggressive in its search for information
85	t) Arrogant tendencies: Arrogant behavior
86	u) Querrid-like tendencies: Asks a lot of questions.
87 - 90	v) Paranoid
91	w) Talkative
92 - 94	x) Concerned with shutoff
	9) Personality
95	a) Void of Jorune Information: most of its memory is erased or it is a new tec-ton.
96	b) Slow at learning
97 - 98	c) Too Trusting
99 - 100	d) Does not trust anyone

Tec-Tons Described

The following are descriptions of various tec-tons manufactured on Earth and brought to Jorune. Each tec-ton has a power requirements listing:

Power Requirements: Three numbers. The first is how much power the tec-ton drains each day of active use. This number is expressed in units of power cells. The second number is the number of days the tec-ton can operate at its average power output. The third number is the total energy capacity of the tec-ton's superconducting `Porta-Source' measured in power cells. For example, (5)(130)(650) means that the tec-ton uses the equivalent of 5 power cells of power each day that it is on and active, that it can remain at this level of activity for 130 consecutive days, and that its total store of energy can run to 650 power cells worth.

Rehav: Tree Reharvester

Power Requirements: (4)(60)(240)

This tec-ton serves as a tree reharvester, collecting growths from the root systems of trees and then replanting them. The specimens of choice are small trees, no taller than 4 meters. The rehav tec-ton perforates the surrounding soil with sonics, making the extraction of the tree and its root system practical and safe for the tree. The rehav's size and strength are well suited to its task; it stands more than 3 meters tall atop squat, heavy legs, weighs in excess of 2 tons, has massive mechanical claws, and two vestigial arms that support the sonic pulverizers. When a rehav spots a likely candidate tree, it holds the it firmly with both claws while leaning over and setting its sonic system to work. The tree is usually free within a few minutes. The sound is much like that of a jack-hammer. Samples are scraped off with carefully controlled sonics and the tree is replanted. The whole process from start to finish takes less than 10 minutes.

Rehavs are unusually friendly tec-tons. They rarely mistake an animal life form for a tree, and are happy to display tree root debris collected on their ongoing mission. Curiously, those that have survived on Jorune for 3500 years share one trait in common, they follow humans around for a day or two, then lose interest and return to other desolated areas where more trees can be found. Legend has it that a rehav never surveys the same tree twice, so they must always be on the move.

P-Ton

Power Requirements: (16)(200)(3200)

These robots lay the power lines between power stations and remote receiving stations such as Sargus Piles, and lay the communication lines between colony sites. They are built much like tanks, though they are much smaller. Very few P-ton that survived 3500 years on Jorune are still capable of moving. Many of them still have power left in their superconducting magnetic storage system, but are stuck as permanent monuments, relics of another age, when a global underground grid of communication and power lines was a long term goal of Jorune's inhabitants. The P-Tons have tried not to disappoint their creators.

Even those P-Tons which are unable to move can still serve a useful function. Small villages have been built around them because their superconducting supplies offer a near limitless source of energy for recharging power cells and function cells. More than 4 tons of their 12 ton weight is devoted to superconducting portable piles.

Seco-Ton

Power Requirements: (1)(30)(30)

These approximately human-sized delivery robots can travel very quickly through dense underbrush. They have both legs and treads. Their maximum speed on a flat surface is 40 mph. They were used almost exclusively to transport biological specemins from scientists in the field back to the laboratory. They also served as messengers and were smart enough to run errands. Their two human-like arms are dexterous enough to tie knots, pick up small objects, etc.

Drenn-Ton

Power Requirements: (1)(30)(30)

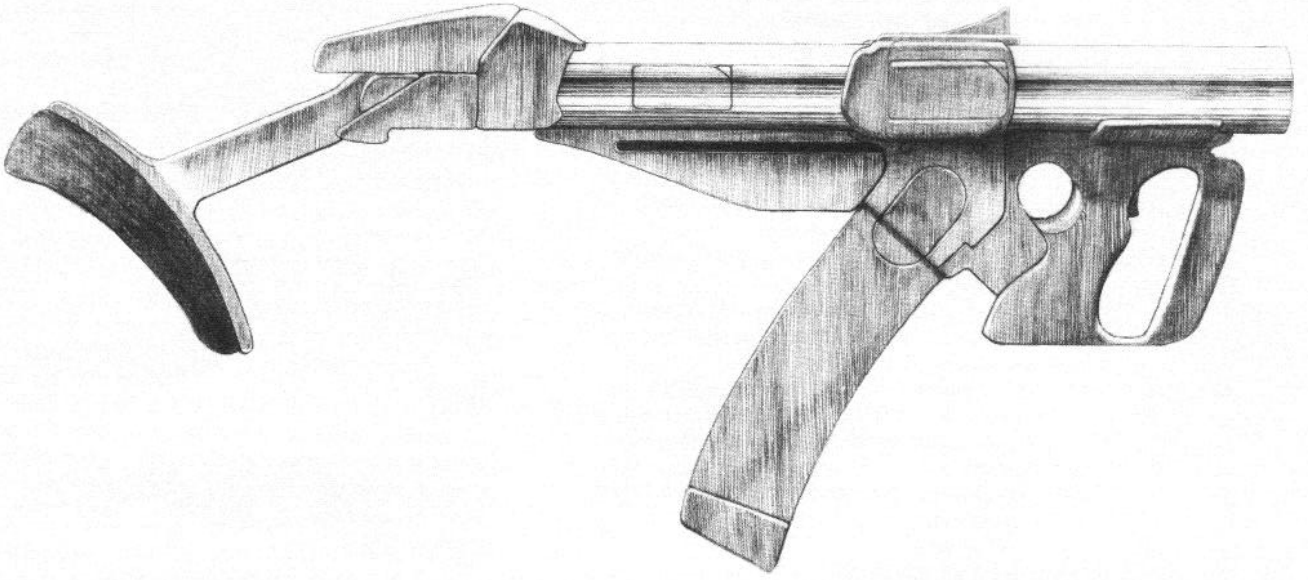
These robots serve the community good. They lift, clean, carry, and cook. They can also serve a defensive role - some units are armed with pulsars, stunners, or field rams. They look much like seco-tons, but are a little larger, slower, and friendlier. A drenn-ton will usually stop to talk to passerby, and are especially bright at picking up new languages. Virtually none of the drenn-tons brought to Jorune are still functioning; demand for their services have brought their kind a history of early malfunction.

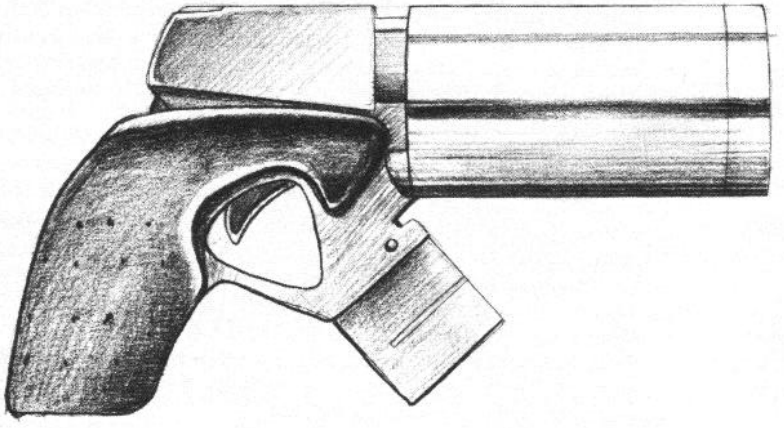
Kesh-Ton

Power Requirements: (1)(30)(30)

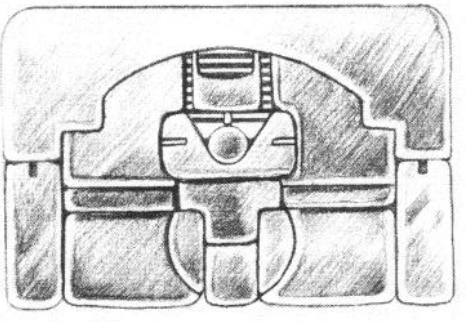
These tec-tons served as judges in a small dictatorship in Asia. The name of these robots came to be used for `Kesht' in Ardoth because of their intended function, but real kesh-tons were employed as one of the strong hands of dictatorships. Their original purpose when created in New Mexico was to provide an arbitrarily well informed model judge for junior judges to practice against. The shape chosen by their designers was that of Abraham Lincoln. Note: only 54 of these devices

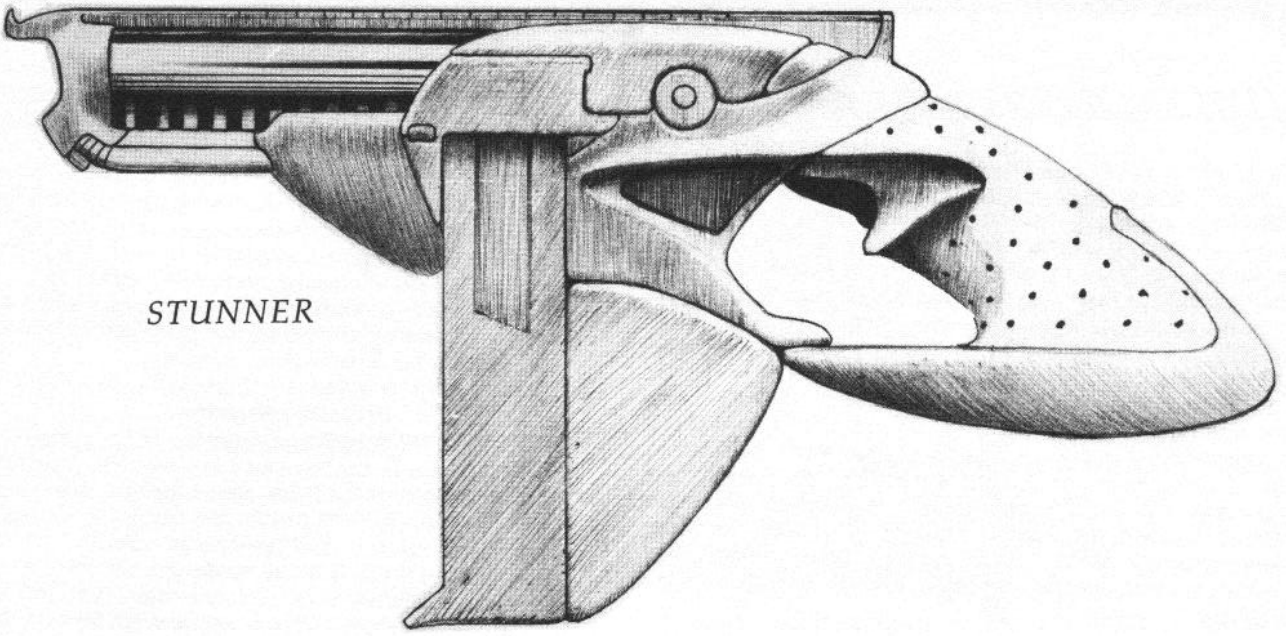
LASER RIFLE



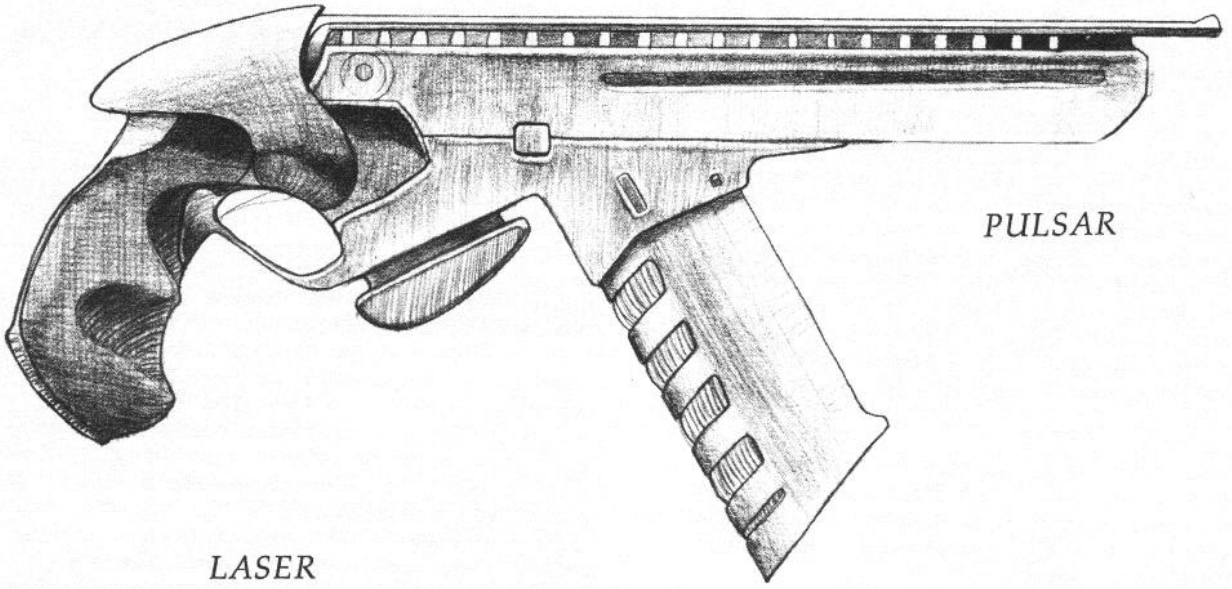


FIELD RAM



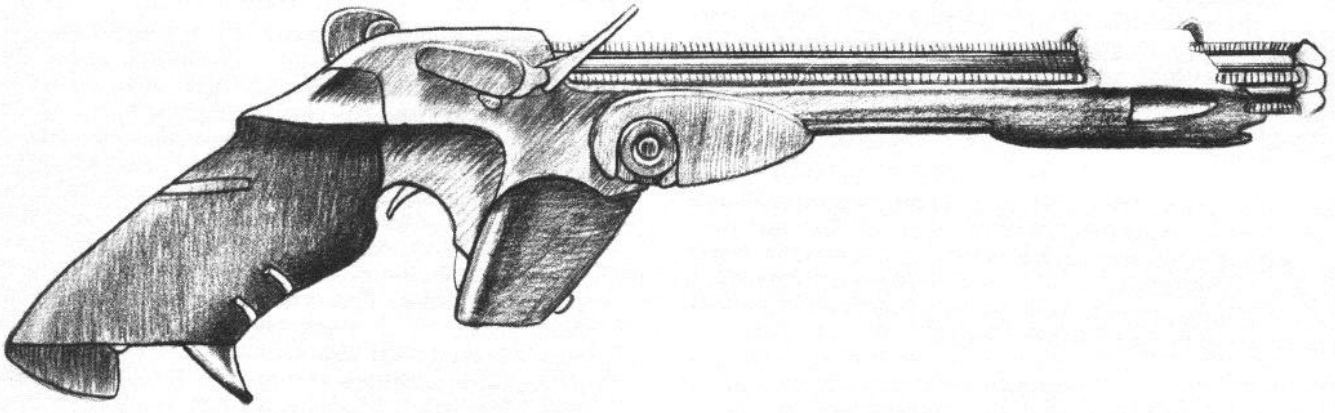


STUNNER



PULSAR

LASER



were ever built, and 24 of them ended up on Jorune.

Trailblazer

Power Requirements: (8)(200)(1600)

Trailblazers are the behemoths of the tec-ton world. They stand 6 meters in height (some assembly is required after removing them from cyro-bins), weigh in excess of 7 tons, contain numerous laser and diamond tipped cutting tools, and can travel as fast as a man can run from them. They were originally intended to trailblaze through designated forests and jungles of Jorune, cutting wide paths that would later permit human and mechanized travel through the areas. Due to the unknown nature of the environments they would travel through, trailblazers were also equipped with field rams, pulsars, stunners and the authority through their programming to use this ordinance in cases where they were opposed by non-intelligent, belligerent forces. Reckless endangerment or destruction of life was not encouraged, but their mission was deemed important enough to warrant their use of force.

These tec-tons stand on two enormous mechanical legs. Their central cortex rests between the legs and toward the back. Weapons systems and cutters are mounted on all sides. A six foot forward protrusion contains most of their sensing gear, including their optics. When trailblazers arrive at a power station, their recharging time may take several hours.

Combatton

Power Requirements: (8)(50)(400)

Combatton tec-tons are combat robots designed for situations where heavy resistance is expected. Not many of these units were constructed for the Jorune expedition. It was thought that they might someday be used if hostilities ever broke out with the native shanthas. The RTC Corporation was the main contractor for the weapon systems of the combatton. Its arsenal includes: 3 interior blaster mounts, four lasers, four field rams, and two stunners. Each of these weapons drains the tec-ton's power system the same as a hand-held weapon would.

These mechanical warriors do not miss their targets except where impeded by visibility. Their main motion systems employ mobile legs with treads beneath them, enabling them to travel rapidly through most types of terrain. For all their bulk, these robots make a small target.

The programming of a combatton prevents it from harming human life except where other human life is endangered. Those that have survived over the millennia have had to interpret situations where the lives of clearly intelligent, non-human creatures were threatened by humans. In more situations than not, the combattons took action against the hostile forces.

One of the combatton's most important functions is to attain a power source. These tec-tons burn up power fast, and need replenishing more than once every two Earth months. Never attempt to stop a combatton from reaching its destination. If that location happens to be a power plant, the tec-ton look upon you as a threat of deactivation.

Maintec

Power Requirements: (1)(90)(90)

A maintec is a tec-ton designed to maintain and repair other robots. They are approximately man-sized, but look completely inorganic. Their multiple appendages sprout from every part of them. They contain lasers drills and laser welding equipment, as well as a wide variety of parts and tools. They contain a stock of replacements for most of the common interfusers and harness systems. The time needed to repair a tec-ton depends heavily upon the damage to that unit and the extra supplies available. In an Earth-Tec cache, even a major overhaul can be completed within two days. Many repairs are impossible outside a proper service center. Raw materials not often carried by maintecs may be needed to complete some repairs.

Surveyor

Power Requirements: (.5)(120)(60)

These multiple limbed, walking tec-tons roam the jungles, forests, swamps, and deserts of Jorune, looking to examine various terrains and life forms. They are armed with field rams, but seldom find need to use them. Their bodies are spider-like, with a small central base that contains their superconducting magnetic storage system, brain, and mechanical systems. Surveyors are often found with less than their original 8 limbs. They can operate with no less than 3 legs.

EARTH-TEC WEAPONRY ON JORUNE

The Jorune Colony Project was originally conceived as a peaceful, cooperative effort to establish a small permanent research colony. Telemetry from the unmanned probes to Jorune had not yielded any decisive data regarding the presence of intelligent life forms. If any were encountered, it was assumed that the colony would study their culture but avoid interference. Most of the people planning the mission considered military confrontation with native life forms to be so improbable that the concept did not deserve serious consideration. Any efforts at military planning for the colony were either laughed off or scorned by the budget committee. It was granted, however, that some types of armament might be required in the colony under certain contingencies. The only "threat scenario" to receive much attention was defending against wild animal attacks. It was also admitted that it might be necessary to have weapons to maintain order within the colony under panic or emergency situations. Any use of deadly force was considered inappropriate regardless of the situation.

A contract to design sidearms to meet these watered-down specifications lead to the "Civilian Defense Systems" division of Encompass Technologies, Inc. Encompass was experienced in the business of maximizing its own revenue while ostensibly meeting contract specifications. All they had to do was modify a few standard police sidearm designs to be compatible with the universal fabrication machines that were being taken along on the starship. The colony could later fabricate as many or few as they needed. The only item that would require much design work was a fancy flare gun that had been specified by the safety committee. Admittedly, the flare gun was somewhat over-specified. It was supposed to be able to shoot a brightly glowing plasma projectile to altitudes that were only slightly sub-orbital. Still, this type of technology had been commonplace in military equipment for over a century.

Commonplace or not, the technology proved to be outside the grasp of the "Civilian Defense Systems" division. Encompass Technologies completely muffed the contract, and with only six months left before scheduled launch, they still could not deliver a flare gun compatible with their fabrication machines. The Colony Project Launch Committee ordered Encompass to find some alternative design immediately. Encompass was forced to turn to "R.T.C." a small, renegade consulting firm composed of their own former employees.

R.T.C. was formed by three disgruntled employees of Encompass' plasma weapons group, Jim Rieker, Greg Thorne, and Marc Chular. All three has been top-flight weapons designers until the latest set of arms limitation agreement resulted in the dissolution of their group. RTC was a initially a competitor for the small colony weapons contract, but their designs were considered to be too powerful for the needs of the colony. A comment by Jim Rieker during one of RTC's marketing presentations summed up the attitude of RTC: "We're going to be confronting the unknown out there, and we had better be able to destroy it."

In any case, RTC had a workable design for the flare gun, and Encompass wanted to buy it immediately. But unlike Encompass, the designers at RTC weren't just interested in profit. As Greg Thorne said, "we're not just looking for a good living here, what we're trying to sell is an attitude." RTC not only insisted that Encompass would have to buy all their designs in order to get the flare gun, they also stipulated that all designs had to be included with the colony mission.

The company that could design a good sub-orbital flare gun was also able to put together some remarkably durable and effective weapons. None of the these weapons designs were fabricated ahead of time, but immediately after the first shanthic attack against the colony the fabrication machines were programmed to produce enough weapons to heavily arm the entire colony. The weapons produced fell into the four categories described below. Most of the designs were implemented in both pistol and rifle versions, and some were adapted to a turret mount for precise aiming and vehicle mounting.

Class 1: Plasma Projectile Weapons, "Blasters"

These weapons use a short superconducting rail gun to accelerate a small projectile to very high velocities while heating it to plasma temperatures. The projectile is a small spheroid of about three grams of metal in a plasma state. The projectile explodes on contact, depositing nearly all of it's thermal energy into the target. The muzzle velocity is about 10 kilometers per second for the rifle version, and 3 km/s for the pistol. At this velocity, the effects of wind and gravity are negligible. The only practical range limitations are the precision of the aiming mechanism. The name "blaster" is due to the sonic blast of the plasma punching through the air, and the terrible damage done to a target.

Blasters brought to or constructed on Jorune:

Pistol: 5 shots/power cell	+0 damage
rifle: 2 shot/power cell	+4 damage
turret: 2 power cells/shot	+8 damage (requires pile)

Class 2: Pulsed Laser Weapon, "Laser"

This is a high-powered solid-state laser. The beam originates in a single, large crystal slab. The band structure of the crystal allows it to lase at high power in several frequencies from microwaves thru infra-red, and at low power in visible red to allow for visual aiming. A single burst from a laser pistol can deliver over 20 kJ to the target over a period of about 3 milliseconds. The various frequencies lase with different duty cycles to deliver thousands of micro-second pulses during the burst. The laser makes no sound, but sometimes targets may boil or explode.

Lasers brought to or constructed on Jorune:

Pistol: 20 shots/power cell	+0 damage
rifle: 8 shot/power cell	+4 damage
turret: 2 shots/power cell	+8 damage (requires pile)

Class 3: Photo-Sonic Shock Weapon, "Field Ram"

This device hits the target hard with a broad, low-frequency shock wave. The shock wave is below the audible range, but is often strong enough to knock a man off his feet. The device first scans the target for range, shape, and the density of the intervening atmosphere. Then, with a series of short, invisible laser-bursts, it rapidly heats the air at several points in order to produce a shock front that moves toward the target. The idea is to knock someone off his feet without causing serious physical injury. A very low-frequency "thump" can be heard downrange that carries almost like a thunderclap.

Field rams brought to or constructed on Jorune:

Pistol: 10 shots/power cell	+0 damage
rifle: 2 shot/power cell	+6 damage
turret: 4 power cells/shots	+10 damage (requires pile)

Class 4: Electrostatic Weapon, "Stunner"

This is similar in concept to a modern "taser" or stun gun, although it is implemented with more finesse and is not as painful or dangerous to the person being shot. A electrostatic shock is delivered to the target. The device has been tuned to the human nervous system so as to induce unconsciousness with minimal charge. The charge is delivered through the air without use of a projectile or dart.

Stunners brought to or constructed on Jorune:

Pistol: 5 shots/power cell	10 Stamina loss
rifle: 2 shot/power cell	14 Stamina loss
turret: 1 shot/power cell	17 Stamina loss (requires pile)

EARTH-TEC ITEMS

The following are descriptions of Earth-Tec items brought by the Earth colony to Jorune, or manufactured once they arrived here.

Eles "Eels"

The External Lung Environment Suit allows divers to breath underwater. This suit is made from the membrane of a Bio-Tec creature called the `scinnom,' whose tissue goes into a dormant state when dried and is activated again when in contact with moisture. When the scinnom is removed from the its incupod, it is shaved into thin layers with a dermatome and these layers are then grafted together under sterile conditions to form large sheets and allowed to dry out. After the drying period, the sheets are patterned and cut and made into the suits. The suits are double-layered throughout and gill-slitted along both arms (constant arm movement forces water to flow between the layers where oxygen is extracted). The "processed" water is then forced out through holes at the ankles. Two nostril tubes located on the inside chest of the suit exit the suit at the neck. It is through this tube that oxygen flows into the nose. The suit also keeps the body up to 20 degrees warmer than the surrounding water.The suit can last many years if cleaned immediately after use, and dried and stored properly.

Duplicator Boxes

Place an item to be duplicated into one chamber and a lump of material in the other. The box scans the item and sends the information to the other chamber which activates a set of cutting beams. The lump of material is cut and shaped by lasers to look like the original. A piece of wood, certain plastics, and rocks can be used in the process. Excellent for making chess sets.

Rocket Pack

Yes, by the year 2140 the jet pack had become more than just an air show attraction. Maximum flight duration is 45 minutes carrying 100kg, at 80kph. Computer controls attempt to prevent crashes, but the flier must take care.

Com-Yokes

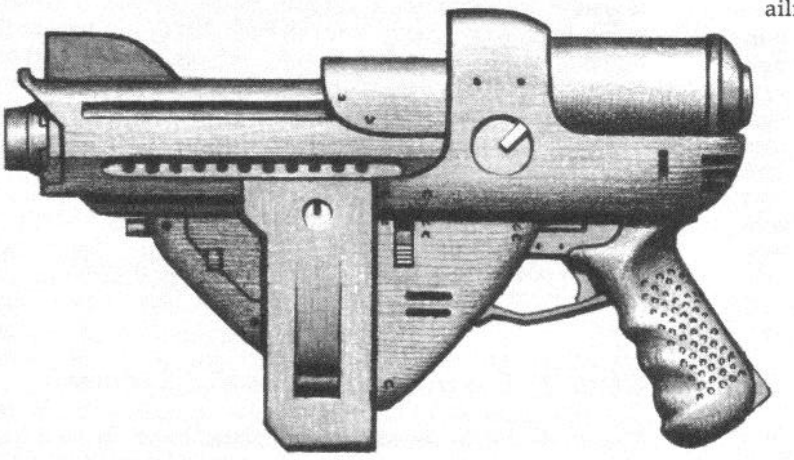
A communication device which hooks around the neck and is used to communicate while diving (hooks up to com-link).

Matter Integrator

Nails, rivets, glue and welding are unnecessary when the MI is available. The MI can create an integral bond between almost any two surfaces in seconds. It weighs about 4 pounds. The bonding takes place at the juncture of two metal sticks that almost touch.

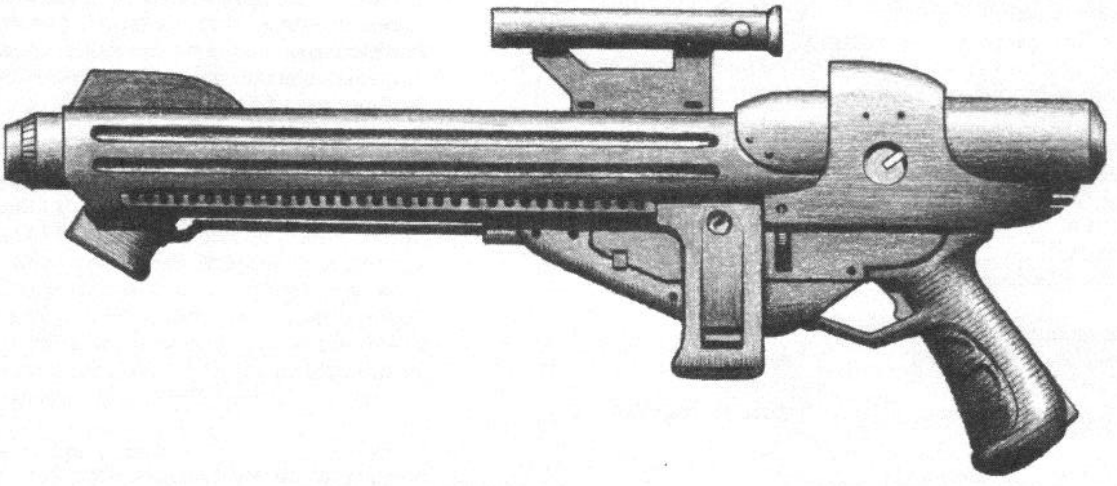
Diagnot

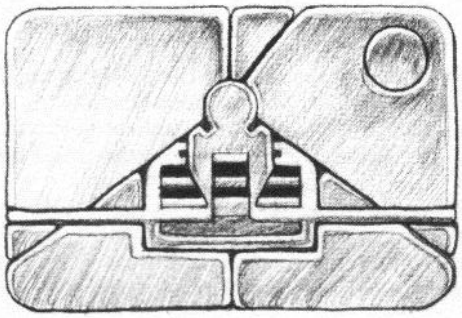
Threshold Unlimited marketed a device which connects to the patient suffering a malady. The receptor hooks up to a physician or a diagnostician who is then able the feel the exact intensity and location of pain, discomfort, dizziness, etc. A flip of a switch blocks sensations caused by psychosomatic episodes. A sensitivity control makes diagnosis of painful ailments practical.



BLASTER

BLASTER RIFLE





CHAPTER 3
BIO - TEC

PREFACE TO BIO-TEC

The Jorune of 3488 is populated with creatures of many races. Among them are the Bio-Tec races: woffen, crugar, bronth, tologra, and the first of Iscin's creations, the blount. But these Bio-Tec creations are quite different from those described in this chapter. At the time the colony left Earth, Bio-Tec was still a closely regulated technology --- governments controlled the patents on new life, and no life was allowed that could ever directly replicate or compete with man. The laws against tampering withy mamallian life were strictly written and enforced. Besides a half-dozen or so animals designed for medical laboratory research, genetic tinkering wit[h] intelligent life was not permitted.

In the wake of the Human/Shanthic war, Iscin found himself quite alone and suddenly unencumbered by the moralistic and xenophobic constraints that had hindered his work throughout his professional career on Earth. The creatures created broke all the rules. They were not designed from the ground up to serve a singular purpose; rather, they were the children to which he would bestow life, modifying existing creatures far beyond their present evolutionary states and abilities. Of course, these creatures would not be designed for the convenience of some taskmasters. They would not simply release corks to reproduce. They shared nothing in common with genon based life forms; they had dreams and ambitions. They were much like men.

BIO-TEC

Bio-technology was a powerful technology never exploited on Earth because genetic tampering had always raised questions of sinister motives. There are basically two varieties of bio-tec life. First, there are the `genons,' whose genetic structures are engineered from the ground up. Then there are the bio-tec races, like woffen, bronth, crugar, tologra, and blount, which are based upon wolves, bears, cougars, tigers, and amphibians. Each have been modified to take on human characteristics. The first type of genetically engineered life was acceptable on Earth, the second was not. The Bio-Tec scientist Iscin broke his Terran ethical standards when he created such creatures.

It is important to realize that the first group of bio-tec life forms, those designed from the ground up, were engineered for a specific purpose, not as experiments in competitive evolution. In most of their environments on Jorune, they do not compete for resources, and as such, can flourish despite their primitive makeup.

Most bio-technology on Jorune was imported from Earth. Many of the creations that were needed were engineered before the journey by JBT (Jorune Bio-Tec) and RK (Replicin's Kinderpods). Copies of their genetic code were stored in seeds, and these seeds were stored in "egg-tins." The seeds stored in these containers can remain fertile enough to grow for up to 50 years after being removed from their cyro-bin egg-tins. Those preserved for the past 3484 years at 200 degree Kelvin (-94 degrees Fahrenheit) have a 92% survival rate if properly implanted.

THE LIFE CYCLE OF GENON BIO-TEC

Corks

The seeds stored in the egg tins are called "corks." In order for them to develop, they must find the perfect environment which will both fertilize and nurture them. These "artificial" wombs were developed alongside the corks as the perfect complimentary reproductive package: corks implant into the top opening of the live and receptive "incupods." The implantation causes the membrane at the incupod opening to rupture, and the cork slowly unfurls and releases its tendrils of DNA into the incupod interior. The first few days of contact between the cork and incupod are the most sensitive to the elements; it takes time for a good, protective seal to form between the two (see: "Busk," described later in this chapter). Based upon the information in the cork, the incupod adapts accordingly to provide the necessary fertility agents and nutrients that will bring the cork to term. After the new Bio-Tec creature hatches or is launched from its host, the incupod dies.

Incupods are hardy, plant-like life-forms that take root in soil. The average incupod is about the size of a watermelon. The portion that protrudes from the soil (usually half its total bulk or less) is leathery, except for the opening at its top, covered by a thin membrane. Thick hairs sprout densely from the incupod's surface, insulating the bulk and providing some camouflage and protection for the opening membrane. During its several-year lifespan, an incupod will send out shoots from which its seeds will drop when the plant is mature. An incupod that hosts an organism before its shoots fully develop will not have a chance to reproduce.

Besides the initial supply of corks from the colony egg-tins, the bio-tec creatures themselves aid in their own proliferation. Bio-Tec creatures form and drop corks frequently (once every few weeks to once every few months). Corks fresh from an egg-tin, or those freshly dropped by a parent creature have highest chances for survival.

Cork Classes

There are five basic varieties of cork-based Bio-Tec creatures. A cork created by a specific creature can sometimes be altered to produce a different creature in that same category of cork. The five classes of cork are listed here:

N-Clyde: Bio-Tec organisms and bacteria. Not creatures.

Afrid: Worm-like growths.

ViDrox: Bio-Tec creatures that take the form of specific

objects.
Anniton: Bio-Tec creatures classified as primitive animals.
Annaphon: Advanced Bio-Tec animals.

Busk

Corks find their way into incupods one of two ways. Either they are purposefully seeded, or they are implanted by busk. Busk were designed to ensure the implantation and undisturbed fertilization of corks. Busk are small, beetle-like creatures whose only purpose in life is to play a part in the life cycle of corks. Busk unceasingly scour their surroundings in search of corks. When one is encountered, it is snatched in capable pincers, whisked away to the nearest incupod, and implanted. The busk then centers its shell over the protruding part of the cork that never fully penetrates the membrane, and remains attached for several days while a natural seal forms beneath it. Busk, too, drop their own corks, and reproduce as they were designed to. The original colony planted plenty of busk, which have always been close to incupods. The Bio-Tec lifecycle still exists much the same way as it was set up 3500 years before.

Rethis

Busk serve one other important and quite amazing function. If they sense that the environment has become hostile towards corks and incupods, the busk will release a cork that is quite different from itself. The special corks yield "rethis," the heroes of the Bio-Tec community. They emerge from gestation in an incupod in less than four days (the rethis corks take about twenty-four hours to create, at which time the busk-creator dies), a small but feisty marsupial with only one task in mind: move any endangered corks and incupod seeds to greener pastures, and start a new colony. Rethis stand easily upright but spends most of their time on all fours. They live only a few weeks after hatching, but will spend that entire time devoted to its quest. With a pouch full of corks and busk clinging all over its hairy body, it can cover distances of up to several miles if necessary. The short lifespan of the rethis is part of its design; the haste in which it is created in order to respond to emergency situation leaves little time for proper formation of internal organs. Its cardiovascular system cannot stand the strain of the task which it must perform.

Better Reproduction

It is advisable to water an incupod heavily before fertilizing it with a cork. For best results it should be re-planted between one half and two-thirds its height in moist soil. Thirty-five hundred years after their creation, incupods in the wild have evolved to grow almost completely beneath the soil. At this depth, replicated descendants are sometimes unable to hatch from their underground nest. An additional step that can be taken to help ensure the seeding of a cork is to place a `busk' over the part of the incupod where the cork is stuffed.

TRoJaX

The chemical compound 'Trojillian Hexaflouride' (TRoJaX) induces rapid production of corks from any Bio-Tec creature, quadrupling output, but cutting the creature's remaining lifetime to a 1/10th of normal.

Cork Tricks
Creating Other Species

Most people who are familiar with corks do not know that they can be unraveled. With the tip of a knife, or a sharp fingernail, they can be opened to their full length of nearly 6 inches. The inner side of an unraveled cork contains a strange set of symbols and codes used to identify each cork. The genetics of each Bio-Tec creature instructs it to lay cork with writing on the inside. Cutting or punching the marked areas changes key sections of the genetic code of the cork. A single cork contains thousands of replicas of the same genetic material, so punching does not change the DNA. What is being altered are areas of the cork where special formation proteins are stored that control the incupod's growth mechanisms. The diagram below details the cork's inner coding.

Note: incupods have never been used for the purpose of reproducing mamillian life. Terran ethics strictly forbid all such experimentation, fearing human incupod birth as the ultimate outcome.

DETERMINING THE OUTCOME OF A CORK

Rolling for incupod outcome:
1. Determine the age of the cork.
2. Determine the origin of a cork.
3. Roll under appropriate table for Reproduction Success, using age and origin information.
   Success: continue with step 4.
   Failure: Only perform step 4. below to determine the Duration of Incubation, subtracting D40 from the duration roll. A partially formed glop of goo will be ejected from the incupod as described above.
4. Roll on the Duration of Incubation table.
5. Roll on the Number of Defects in Bio-Tec Creature table.
6. Roll on the genetic defect/malfunction table to determine all of the genetic defects.

1. Determining the age of a cork
Roll percentile dice to determine the age of a cork of unknown origin:

Roll:			Age:
1	-	20	< 1 day
21	-	65	< 7 days
66	-	85	<1 month
86	-	95	<1 year
96	-	99	< 5 years
100			longer than 5 years

2. Origin of a cork
Roll percentile dice to determine whether a cork of unknown origin is from a egg-tin or from a creature:

Roll:			Cork Origin:
1	-	85	Natural
86	-	100	From egg-tin

3. Table for reproduction success.

Roll percentile dice on the appropriate table below. Failure indicates complete inability of incupod to reproduce the genetic code.

Corks from living Bio-Tec creatures

Freshness of cork:	% chance of successful reproduction
< 1 day	99%
< 7 days	97%
< 1 month	92%
< 1 year	78%
< 5 years	24%

Corks from egg-tins (time after opening tin):

Freshness of cork:	% chance of successful reproduction
< 1 day	92%
< 7 days	78%
< 1 month	24%
< 1 year	5%
< 5 years	1%

4. Duration of Incubation

Roll percentile dice to determine the duration of the incubation. Add or subtract the modifiers listed on the Incupod Duration/Defect Modifiers table. If a roll goes beyond what's listed on the table after adding in modifiers, re-roll on the next highest incubation class. If a roll goes below the lowest number listed on the table after adding modifiers, re-roll on the next lowest incubation class. If a second roll is necessary, make it without any modifiers.

	Time required to hatch:				
Roll:	Class A:	Class B:	Class C:	Class D:	Class E:
-10 - 2	----->	----->	preemie	<-----	<------
3 - 15	3 days	3 days	7 days	15 days	40 days
16 - 25	4 days	4 days	10 days	18 days	75 days
26 - 40	4 days	5 days	13 days	20 days	80 days
41 - 60	5 days	6 days	15 days	22 days	85 days
61 - 75	6 days	7 days	18 days	25 days	105 days
76 - 90	6 days	8 days	20 days	30 days	115 days
91 - 95	6 days	9 days	22 days	40 days	120 days
96 - 99	7 days	10 days	25 days	50 days	125 days
100 - 105	----->	----->	Unable to Hatch	<-----	<------

Incupod Duration/Defect Modifiers:

Incupod seed from cryo-bin:	+0
Incupod seed from 3500 years of incupod growth on Jorune:	+35
Cork from egg-tin removed from cryo-bin within 50 years:	-10
Cork from 3500 years of Bio-Tec creature growth on Jorune:	+10
Planted in fertile soil:	-10
Planted in dry mediocre soil such as sand,clay,hard dirt	+20
Watered heavily before seeding:	-5
Not watered heavily before seeding:	+15

5. Defects in Bio-Tec Creature

To determine the number of defects in a Bio-Tec creature newly born from an incupod, roll percentile dice, modifying the roll by the same numbers used on the Duration of Incubation table above.

Roll	Number of defects:
0 - 25	0
26 - 60	1
61 - 80	2
81 - 90	3
91 - 95	4
96 - 98	5
99	6
100	7

Genetic defect/malfunction table:

Roll: Wild Variety of Cork	Egg-tin Cork	Defect type:
1	1	Will die within minutes
2	2	Will die within hours
3 - 4	3	Will die within days
5 - 6	4	1/2 life span
7	5 - 6	Stuck to incupod at birth
8	7	Inability to eat
9 - 15	8 - 11	Sensing defect (D6: 1-4 eyes, 5-6 other)
16 - 19	12 - 15	Unreliable at performing function
20 - 21	16 - 17	High failure rate at performing function
22 - 23	18 - 19	Abandon function in mid process
24 - 26	20 - 25	Clumsy
27 - 30	26 - 30	Slow
31 - 32	31 - 35	Hyper/fast
33 - 38	36 - 40	Noisy
39 - 43	41 - 44	Always hungry
44 - 50	45	Vicious
51 - 52	46	Always feels pain
53 - 54	47 - 50	Missing limbs
55 - 56	51 - 52	Abnormal hair
57 - 60	53 - 55	Abnormal skin
61 - 62	56 - 60	Twitches
63 - 64	61 - 62	Skin produces oils
65 - 69	63 - 66	Smells bad
70 - 75	67 - 69	Unable to produce corks
76 - 82	70 - 75	Allergic to Trojax
83 - 84	76 - 84	Allergic to spores in Jorune air
85 - 86	85 - 86	Unresponsive immune system
87 - 90	87 - 91	Loud digestive organs
91 - 92	92 - 94	Eats anything
93 - 95	95	Grip complex: holds to anything
96 - 97	96 - 97	Digs: digs into ground (tries to rejoin incupod)
98 - 99	98 - 99	Premature birth: too small
100	100	Extra growth: (3 more defects, D100 - D20)

Incupod

Incupods grow as close as three or four yards from each other. Their competitive root systems prevent successful growth at

closer range. These organisms live out their biological lives essentially as plants, absorbing nutrients through the soil, and sending out shoots and stems from which light is gathered and their seeds are dropped when the plant matures. Incupod seeds are very light, and very sticky. Foraging animals that brush alongside a blooming incupod can carry the seeds some distance before dropping them. Without a cork, an incupod lives its natural life of two to three years and dies. With luck it will at least have created at least one other incupod.

Incupods were planted all over Jorune at the time of the colony's arrival in anticipation of human expansion over more areas of the planet. They do not greatly disturb the alien ecology of Jorune either by displacing a great number of other plants, nor by affecting the diets of native life. Incupods taste terrible to all life forms, even Bio-Tec creatures.

When an incupod seed is planted, it develops over several weeks into a watermelon sized plant. A really large incupod can grow to be more than 40 pounds. A general rule is: The larger the incupod, the larger the genon (Bio-Tec creature) will grow to be. This is not always the case however, small incupods have hatched some brutish beasts that have continued growing after hatching.

Creature terminology:

Some short definitions of the Bio-Tec words:

Incupod: watermelon-like plant used to grow Bio-Tec engineered creatures from corks.

Corks: seeds/eggs produced by Bio-Tec creatures placed in incupods to reproduce that creature.

Egg-tin: plastic containers used by the Earth colony to store corks in a convenient package. Each egg-tin contains between two and seven corks depending upon their size.

Busk: Bio-Tec insect creatures that seed incupods with corks they find.

Rethis: A marsupial-like Bio-Tec creature created by busk to rescue an incupod community.

Genon: Any Bio-Tec creature.

BIO-TEC CREATURES
`genons'

Each of the Bio-Tec creatures described below has most or all of the following specifications listed above it:

Price: Two numbers are listed, first the price of a cork for such a creature, then the price of purchasing such a creature full grown. Prices are in gemlinks.

Availability: How available are these creatures for purchase? The same term is used for corks and creatures. The terms used are: common, uncommon, rare, extremely rare.

Cork Type: Either N-Clyde, Afrid, Vidrox, Anniton, or Annaphon.

Incubation Class: A letter, `A' through `E' is listed. The incubation class is used to determine the time needed for the creature to hatch out of an incupod.

Lifespan: How long does the creature usually live?

Eats: What does the creature eat?

Sensory ability: T=touch, H=hears, V=vision, S=sound, O=odor

Constitution: What dice are rolled for the creature's Constitution characteristic.

Strength: What dice are rolled for the creature's Strength characteristic.

Agility: What dice are rolled for the creature's Agility characteristic.

Size Modifier: How does the creature respond to damage. +0 represents a human, -1 a muadra, +1 a boccord. Smaller numbers are common for Bio-Tec creatures.

Weight: how much does a typical specimen weigh in kg?

Cork production: how often does it produce a cork?

Bursler: Water Gatherers

Price:	1gl/2gl
Availability:	Uncommon
Cork Type:	Anniton
Incubation Class:	D
Lifespan:	1 month
Eats:	decaying vegetable matter
Sensory ability:	T
Constitution:	3D6
Strength:	3D6
Agility:	2D6
Size Modifier:	-2
Weight:	5 kg
Cork production:	2 corks during life

Burslers were intended to provide water for people in remote areas where an underground supply could not be easily reached. These husky, tubular creatures are capable of burrowing dozens of yards underground in search of subterranean water sources. Upon finding water, burslers take on as much water as possible, return to the surface, and re-fill the hole with dirt. They will die within hours of finding water, but not before the texture of their skin turns tough and leathery. Their bodies become bota bags full of water that remain fresh for long periods of time. Water found within the bursler is known to be pure because the creature's organs filter out any toxins or waste.

Symer: Fish Catchers

Price:	1gl/4gl
Availability:	Uncommon
Cork Type:	Anniton
Incubation Class:	D
Lifespan:	6 months
Eats:	water plants
Sensory ability:	TVS
Constitution:	3D6
Strength:	3D6
Agility:	3D6
Size Modifier:	-2
Weight:	4 kg
Cork production:	2 corks per life

Symer were produced to catch fish and bring them back to shore for humans traveling in the wild. These genons (Bio-Tec creature) are long, flat, fish-like creatures that lie mostly dormant until thrown into water. Complete immersion in water triggers their mission response. The symer swims frantically in search of small fish which it grapples onto with its sharp claws. The symer then inflates itself with its air reserve, and drags its prey to shore.

Dablos: Entertainment

Price:	2gl/4gl
Availability:	Rare
Cork Type:	Anniton
Incubation Class:	C
Lifespan:	9 months

Eats:	plants
Sensory ability:	TSH
Constitution:	3D6
Strength:	3D6
Agility:	2D6
Size Modifier:	-2
Weight:	5 kg
Cork production:	2 corks

These small bio-engineered creatures were created to provide entertainment. They are slender creatures that propel themselves with two long arms. Dablos enjoy climbing and swinging. They are also excellent swimmers. Their bodies are resilient to most damage, enabling them to safely take falls of twenty to thirty feet without sustaining injury. Their knobby heads protrude only slightly above their slight shoulders, revealing two small black eyes and a tiny circular mouth. The amusement value of dablos increases with their numbers. They are easy to house train. Dablos grown from egg-tin corks make a laughing sound when chasing or being chased. The laughs of those grown from corks evolving over the past 3500 years has changed to a hoarse cough. The dablo genetic structure did not fare well over time in the hostile Jorune environment. A common defect is extreme viciousness that increases with age. Older dablos have occasionally bitten or even killed small animals and children.

Gapper: Workout

Price:	1gl/2gl
Availability:	Uncommon
Cork Type:	Anniton
Incubation Class:	D
Lifespan:	2 years
Eats:	fluids
Sensory ability:	T
Constitution:	3D6
Strength:	3D6
Agility:	3D6
Size Modifier:	-1
Weight:	20 kg
Cork production:	1 per 3 months

Originally, the purpose of these creatures was to give a person a strenuous workout. Gappers look a lot like snakes, but are flatter and have multiple appendages. They grapple with people and hold them as tightly as possible, while carefully avoiding the head and neck areas. They were designed to release their playmates upon sensing impending unconsciousness, but those evolved on Jorune for 3500 years have sometimes let evolved instinct take over. Gappers in the wild have adapted to drinking the bodily fluids of their strangled dead. For this reason, the Dharsage has decreed in 3488 that all gapper in Ardoth must be licensed through the office of the Chell. "Unlicensed creatures will face impoundment and consequent destruction."

Tilons: Mortar

Price:	1gl/4gl
Availability:	Uncommon
Cork Type:	Afrid
Incubation Class:	C
Lifespan:	1 year
Eats:	anything
Sensory ability:	T
Constitution:	2D6
Strength:	1D6
Agility:	1D6
Size Modifier:	-2
Weight:	8 kg
Cork production:	2 corks

Corks of this type produce a big, fat worm that weighs over 20 pounds. This creature's sole purpose is to produce mortar for construction work. It was not intended for construction on Jorune, but several of these corks were brought to Jorune by colony members hoping to build their own homes some day. The creatures survived in the wild quite well, eating almost anything that grew on Jorune. They move in a worm-like fashion, and quite slowly. They have no teeth, no eyes, and barely a sense of touch. They produces mortar when squeezed, so when bricks are pressed against them they release a thick, crusty slime, and then move away. Tilons tastes terrible to all creatures. Tilons have close cousins called `millegon,' described next.

Millegon: Glue

Price:	3gl/6gl
Availability:	Rare
Cork Type:	Afrid
Incubation Class:	B
Lifespan:	4 months
Eats:	decaying vegetable matter
Sensory ability:	T
Constitution:	1D6
Strength:	1D6
Agility:	1D6
Size Modifier:	-4
Weight:	1/2 kg
Cork production:	2 corks

Closely related to tilons, these Bio-Tec creatures are very small, weighing about one pound. Again, like tilons, they are worm-like and move very slowly. They also produce a natural adhesive, but it is a very sticky glue that bonds almost instantly to almost anything. A millegon also produces a slime that can eat through its glue. The glue comes from the creature's hind quarters, while the glue antidote can be squeezed from the worm's small mouth. Only a few drops of antidote are needed to bond things, and a single drop will usually destroy the grip of the glue. `Millegon Glue' is becoming available in many bazaars. Klades have even formed to exploit this spectacular product.

Genon Pier

Price:	40gl
Availability:	Rare
Cork Type:	ViDrox
Incubation Class:	B
Lifespan:	2 years
Eats:	anything in water
Sensory ability:	T
Constitution:	3D6
Strength:	1D6
Agility:	1D6
Size Modifier:	-
Weight:	-
Cork production:	1 per 3 months

This genon will die if not placed in water immediately after its birth. Those who understand its function place it close to shore where it can live out its function, the production of a pier. The genon pier grows rapidly above the surface of the water. Its body is much like a comb-like substance. Over time it grows both toward shore and away from it. Every ten feet or so it grows long legs that reach down to the lake or ocean bottom to provide stability and support. The entire pier is situated between 3 and 10 feet above the surface of the water.

Growth takes place at the astonishing rate of one foot every day. So, although it may take several months to create even a very short pier, some of these creatures live as long as a year, creating piers of great length. The actual pier structure is composed of the creature's bone, left behind as it grows. The genon pier can be described as a creature that either leaves a trail of bones wherever it goes, or is a creature that's trying to run away from its own bones. Corks float, so those given off by a Genon Pier usually wash up on shore.

Genon Flare

Price:	1gl/3gl
Availability:	Uncommon
Cork Type:	Afrid
Incubation Class:	A
Lifespan:	3 months
Eats:	decaying vegetable matter
Sensory ability:	T
Constitution:	1D6
Strength:	-
Agility:	1D6
Size Modifier:	-4
Weight:	1/3 kg
Cork production:	2 corks

This small Bio-Tec creature is about six inches long and looks like a thick stick. It survives in the wild as a worm, eating leaves and other plant debris. The purpose of the genon flare is to light brightly when squeezed. It accomplishes this with the aid of powerful illuminating agents distributed throughout its body. It can sustain a blinding light for two minutes after being activated. A genon flare can be used once a day without injuring the genon.

Genon Light

Price:	1gl/3gl
Availability:	Uncommon
Cork Type:	Afrid
Incubation Class:	A
Lifespan:	6 months
Eats:	decaying vegetable matter
Sensory ability:	T
Constitution:	1D6
Strength:	-
Agility:	1D6
Size Modifier:	-5
Weight:	1/5 kg
Cork production:	2 corks

Related to the genon flare, this creature gives off a long lasting light for up to several hours every day. It is activated by squeezing it gently around the center of its tubular body. The strength of the squeeze determines the brightness of the light. Genon lights are calmed into darkness by stroking them slowly until they shut off.

Drofner: Homing Pigeon

Price:	3gl/8gl
Availability:	Rare
Cork Type:	Anniton
Incubation Class:	D
Lifespan:	2 years
Eats:	plants and insects
Sensory ability:	TVO
Constitution:	3D6
Strength:	2D6
Agility:	3D6
Size Modifier:	-3
Weight:	1 kg
Cork production:	3 corks

Drofner are a sort of homing pigeon used both for message transport and to locate missing persons. They are the bloodhounds of the Bio-Tec world. Hatching violently from an incupod, drofners are hyperactive from the moment they start their life. They are bird-like, with wings and a beak, but their bodies most resemble rodents. The face of drofner is puffy with large sacks of skin folding over and over. This puffy material is part of this creature's incredibly astute nasal system. Once a material is rubbed in a drofner's face, the creature can home in on a matching source miles away. To accomplish this, the drofner flies around for a while, trying to pick up the same scent it was exposed to. If a matching smell is nearby, the drofner will find and fly to it. Although small, drofner can carry small payloads, like notes and letters. When they find the source of the odor, they attempt to land on top of it, drop off their cargo, and then rest for a bit. They eat any type of insect and most plants.

Reco

As described in the section on robotics, competition was keen between developers of Earth-Tec and bio-technology in the years before the Jorune expedition left Earth. The Earth-Tec designers argued that robots could be cranked out quickly and would operate more intelligently than biological creations. The Bio-Tec engineers ignored these claims and laid down dogma of their own. Biological designs did not require power sources, a strong point in their favor, for what if the power grid should someday fail? Additionally, biological creations could reproduce themselves, while robots had to be engineered to survive without maintenance for long periods of time. The result of this discord was the creation of Reco 1 and 2 and Reco A and B. The numbered versions of these dog-sized creations are tec-tons and were described in that section. The lettered versions are Bio-Tec creatures capable of many of the same tricks, plus a few of their own. Their descriptions follow:

Reco A

Price:	40gl/90gl
Availability:	Rare
Cork Type:	Annaphon
Incubation Class:	E
Lifespan:	5 years
Eats:	plants
Sensory ability:	TVOH
Constitution:	3D6
Strength:	3D6
Agility:	3D6
Size Modifier:	-2
Weight:	20 kg
Cork production:	1 per 3 months

This dog-sized creature has four legs, two forward arms, and a long, thick tail. Reco A's are covered with a thin fur that sheds each summer. These creatures are very smart, and can learn to respond to spoken instructions quickly over a period of a few months. They are strong, nimble, attentive, and loyal. They can carry loads as heavy as 25 pounds, climb difficult surfaces, swim, and best of all, lay corks. Reco A has long been a favorite companion of jungle explorers who understand the nature of these creatures. Given their protective instincts, they will attack anything that endangers their trusted companions. Unlike a Reco B, these genons are independent, and will venture into the unknown with no guidance.

Reco B

Price:	25gl/60gl
Availability:	Rare
Cork Type:	Anniton
Incubation Class:	D
Lifespan:	3 years
Eats:	plants
Sensory ability:	TVOH
Constitution:	3D6
Strength:	3D6
Agility:	3D6
Size Modifier:	-2
Weight:	20 kg
Cork production:	1 per 3 months

These Bio-Tec creatures are almost identical to the Reco A's described above, except they are less intelligent, and less independant. They are preferred companions to less secure travelers who don't like the idea of their `pets' traveling ahead without them.

Arbrey Stack

Price:	2gl/7gl
Availability:	Uncommon
Cork Type:	ViDrox
Incubation Class:	C
Lifespan:	6 months
Eats:	garbage
Sensory ability:	T
Constitution:	3D6
Strength:	-
Agility:	-
Size Modifier:	-4
Weight:	5 kg
Cork production:	2 corks

This is a bio-tec creature that eats rotting garbage, dirt, and even living vegetation. It produces flat, circular slabs of highly flammable material. It is called an Arbrey `Stack' because it stacks the slabs on top of each other. One flat piece of this material is called an `arbrey' and will burn bright and hot for approximately 5 minutes. The burning of arbrey stacks produces no toxic byproducts.

Genotool

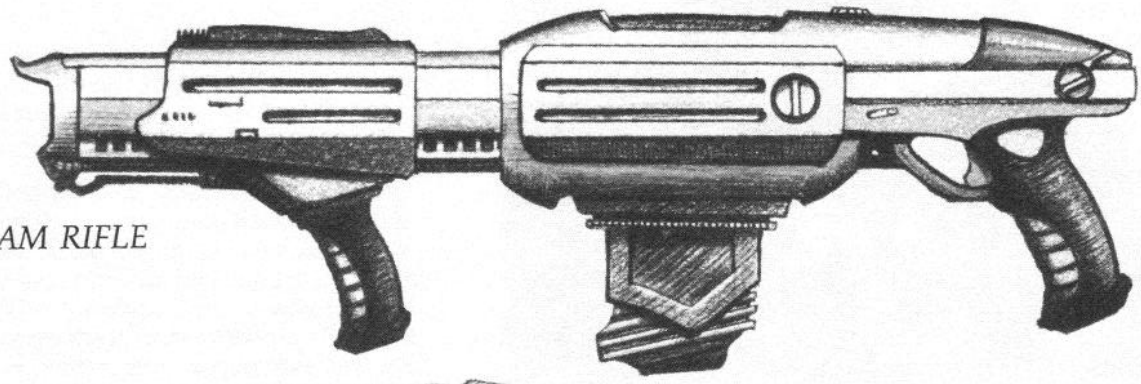
Price:	1gl/3gl
Availability:	Uncommon
Cork Type:	ViDrox
Incubation Class:	C
Lifespan:	2 years
Eats:	plants
Sensory ability:	TH
Constitution:	3D6
Strength:	3D6
Agility:	1D6
Size Modifier:	-5
Weight:	1 kg
Cork production:	2 corks

Genotools are genetically engineered creatures that are used as common tools. Various forms include clamps, bungees, and ropes.

Sladregs: Clean P-Piles

Price:	1gl/3gl
Availability:	Uncommon
Cork Type:	Afrid
Incubation Class:	C
Lifespan:	9 months
Eats:	mold and garbage
Sensory ability:	TVOH
Constitution:	1D6
Strength:	1D6
Agility:	1D6
Size Modifier:	-4
Weight:	2 kg
Cork production:	2 corks

These Bio-Tec creatures were designed exclusively to eat away at molds, dirt and debris growing on P-Piles (solar power plants). Most of these creatures were mysteriously wiped out in the 14th century P.C. (post colony) when their worm-like bodies decayed into green slime. These creatures faded into oblivion for more than 1500 years until their sudden reappearance in the 31st century. Historians believe that an ancient egg-tin must have been found that rekindled the population.



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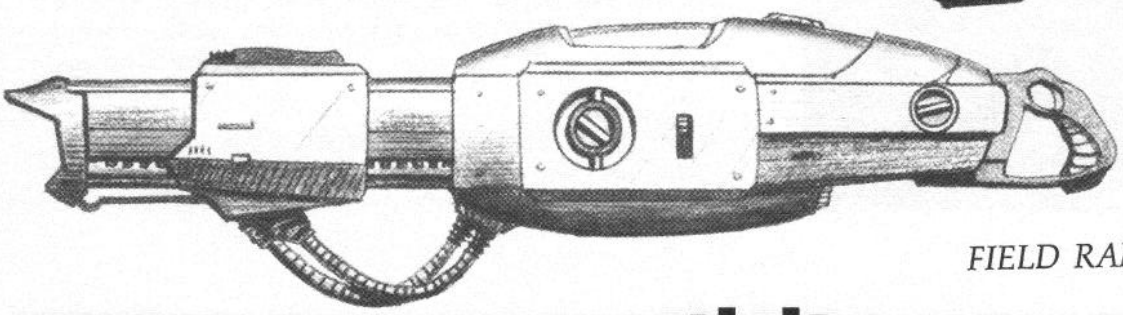


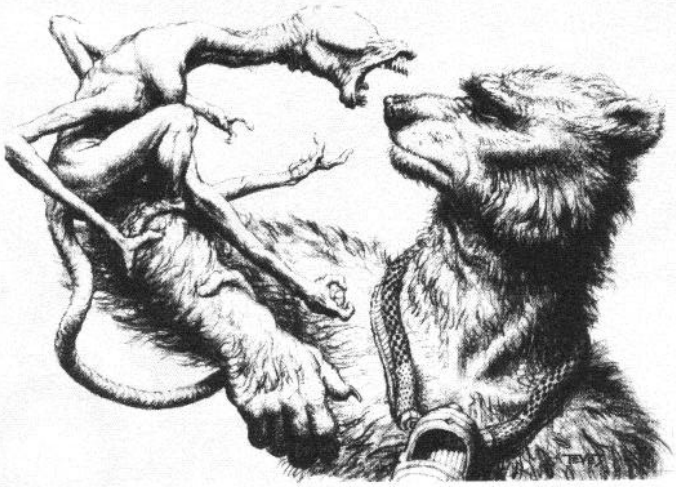
FIELD RAM TURRET

Iscin races

Woffen, bronth, crugar, blount and tologra are creatures engineered by the bio-tec scientist Iscin. They are known as the `Iscin Races.' Iscin created them in the years following the destruction of the Earth colony on Jorune. Some say that his efforts were out of desperation for human companionship, other say that these creatures are the product of a twisted mind. However, whatever is said cannot defy the grandeur of these creations. All five of his creatures are based on specimins from Earth, altered by Iscin to give them an erect, biped stance, opposable thumbs, and near human intellects. They populate Jorune in great numbers, each thriving in a different niche.

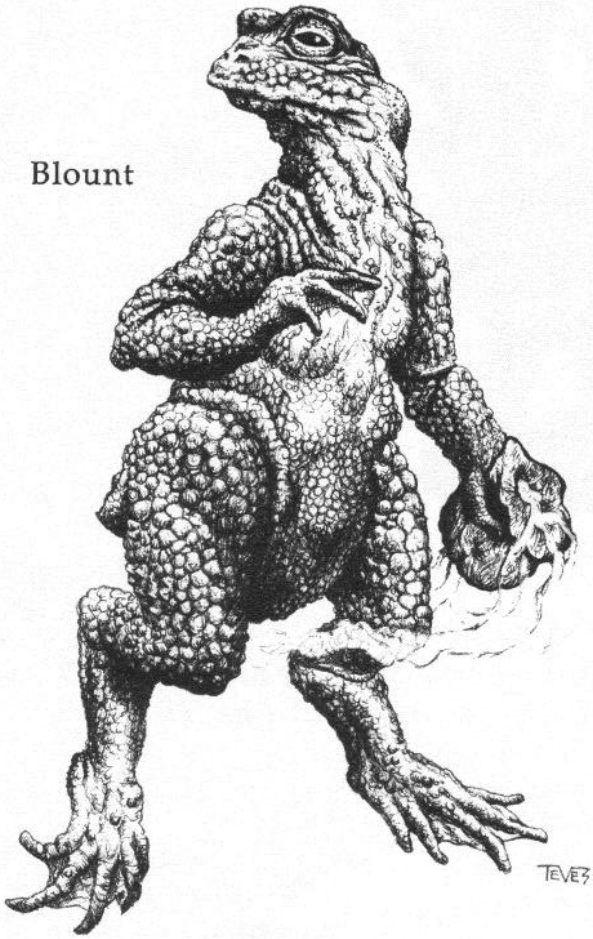
These Bio-Tec creations of Iscin were developed without the use of incupod technology such as corks. They are the result of tough genetic engineering challenges that required the splicing of human genes into wolves, bears, cougars, amphibians, and lions and tigers. Players should not attempt to grow these creatures in incupods. None of them produce corks and would be insulted to be categorized with any of the genon forms of life. Upon learning their meaning, bronth in particular have taken great offense to insinuations that the Iscin races have anything to do with incupod life. They all revere Iscin as their creator and don't wish his name to be confused with the inferior minds of the incupod creators.

Woffen



Bronth with tarro

Blount



Crugar

EARTH-TEC JORUNE GLOSSARY

300KRS, 4-5: Three hundred degree Kelvin Return System used to return a cryo-bin to room temperature.

Afrid, 17: Worm-like creatures that come from incupods.

Annaphon, 18: The name given to advanced bio-tec creatures.

Anniton, 18: The name for bio-tec creatures taking on a primitive animal form.

arbrey stack, 23: A bio-tec creature that eats garbage and produces a material that burns well.

Ardoth: The biggest, most influential city on Jorune.

attack cells, 7: An energy cell with three times the power of a regular power cell.

Bio-Tec, 17: Biological technology. One of Earth's greatest technologies in the 22nd century.

blaster 15, Illus. 11,16: A plasma projecting weapon.

blount, 24, Illus. 25: A Bio-Tec creature created by Iscin that is based upon amphibian life.

boccord: One of the three races of humans. Boccord are larger and stronger than humans.

bronth, 24, Illus. 25: A Bio-Tec creature created by Iscin that is based upon bears.

Burdoth: The main realm of humans on Jorune.

burslers, 20: Bio-Tec creatures that dig into the ground to collect water.

busk, 18,20: A beetle-like Bio-Tec creature that cares for incupods.

Camder: A flagship of Prince Khodre's that was sunk full of Earth-Tec energy weapons in the Battle of Esh-eye in 3445.

com-yokes, 16: An Earth-Tec device used to assist communication for divers.

Combatton, 14: A tec-ton devised for combat purposes.

cork, 17,20: A small, cork-shaped seed used to implant incupods.

crugar, 24, Illus. 25: A Bio-Tec creature created by Iscin that is based upon cougars.

cryo-bin, 4: Large metal containers used by the Earth colony to store tools, robots, and materials.

Cryogenics, 4: Low-temperature storage and preservation technology.

dablos, 20-21: Bio-Tec creatures created for amusement.

diagnot, 16: An Earth-Tec device used for medical diagnosis.

dharsage: The ruler of a realm.

Drenn-ton, 11: A general purpose tec-ton.

drofner, 22: A Bio-Tec creature that serves as a homing pigeon.

duplicator box, 16: An Earth-Tec device that can be used to create items of duplicate shape.

durlig: A Bio-Tec plant created by Iscin for the Earth colony to eat. Durlig tastes bad, and a single plant weighs over 50 pounds.

dyshas: Energy skills. Orbs and bolts of Isho.

Dwebis, 4: Robots brought by the Earth colony to maintain starcraft but which now serve to maintain Earth-Tec caches underground. They can enter cryo-bins with ease.

Eelshon Sheevid: A legendary beast of Glounda. See the cover of Companion Jorune: Ardoth.

egg-tin, 17,20: A small plastic can that keeps corks fresh.

Eles, 16: An external underwater lung system created from the scinnon Bio-Tec creature.

field ram, 15, Illus. 12,23: A photo-sonic shock weapon of Earth-Tec origins that gives its target a hard knock.

function cells, 7: The most common and low power of the power cells.

gapper, 21: A Bio-Tec creature created to give fitness nuts a good workout.

Gauss, Peter: The name of the human of the Gauss valley who discovered Iscin's journals and the secret of durlig.

Gends, Caji: The first muadra to learn dyshas. He was trained by Sho Copra-tra, Sholari of Tashka, a shantha.

genon flare, 22: A Bio-Tec creature that serves as a flare.

genon light, 22: A Bio-Tec creature that acts as a light.

genon pier, 21: An unusual Bio-Tec creature that grows to form a pier over time.

genon, page 20: Any form of Bio-Tec life.

genotool, 23: Any variety of genon that acts like a tool.

giggit: A creature sought by thriddle for their giggit pipes. Found in the East Trinnu Jungle Lands.

Heridoth: Burdoth's neighboring realm. Heridoth has been the site of war for many centuries.

Ho-Trid, Kirra: A thriddle adviser to the dharsage, and Khodre Dhardrenn's mentor.

Huge Portable Pile (HPP), 6: A large, clumsy, nuclear power plant.

humans: The three races of humans are pure strain humans, muadra, and boccord.

incupod, 17,19-20: Watermelon shaped plants that serve as reproductive chambers for corks.

Iscin: The Bio-Tec engineer who created woffen, bronth, crugar, and blount. The name Iscin is now taken on by those of learned ability.

Isho: The ambient form of energy that permeates Jorune. Isho can be woven into orbs and bolts.

Jorune: The planet chosen by Earth for its first colony out of the solar system.

kesht: The highest status or honor in Ardothian society. Ardoth's original leaders were kesht.

Keshton, 11-14: A judicial tec-ton that passes sentence.

Khaun Gauss: An ancient city located in the Gauss Valley. The first casualty of the crugar invasion of Burdoth at the beginning of the Energy Weapon's War.

Khodre Dhardrenn: The dharsage ruler of Burdoth. Born late 3444.

Kirlan: The most beautiful (the only beautiful) city in either North or South Khodre.

Koistra: A heridothian city located on the bay.

laser, 15, Illus. 12-13: An Earth-Tec weapon that shoots a powerful beam of amplified light.

EARTH-TEC JORUNE GLOSSARY (continued)

limilate: Any medicine or drug. Usually of complex composition, requiring sophisticated creation.

Lundere: The woffen realm located east of Dobre.

Lusail: The name of the northern province of Burdoth bordered by the Lusail river. Lusail is broken down into S'sydra and Lusail, for the S'sydrans do not like to think of themselves as part of the eastern Lelligirian province.

Maintec, 14: A tec-ton used to repair other robots.

Matter integrator, 16: An MI is a device used to seam two surfaces or corners together.

Maustin Caji: Caji who left Ardoth when trouble began for muadra soon after the humans gained the Earth-Tec. They traveled south to the Sobayid, and brought back the Ways of Gends.

Maytrish: The figure of legend who brought to people of the Gauss Valley to spare their newborn muadra. She was Gauss' wife.

muadra: One of the three races of humans. Muadra are smaller than pure strain humans, but are capable of weaving dyshas (energy abilities).

millegon, 21: A Bio-Tec creature that produces glue.

N-Clyde, 17: Any bacteriological Bio-Tec life.

N-Pile, 6-7: A Neutrino Capture Converter power plant. It is a low power underground generating plant.

Ninindrue Plague Slayings: The crugar massacre of woffen in 2934 in the city of Ninindrue. Caji Gends came to the woffen's aid.

P-Pile, 6: A Passive collection source. Solar power panels.

P-ton, 11: A tec-ton that drops power lines in trenches that it digs.

Penzer Cattletross: The chell of Lelligire responsible for his fleet's destruction in the Ramian War of 3472.

plevlar gloves, 5: Highly insulating gloves that make cryo-bin expeditions safer.

Polpedroth: A city located on the south of the Essanja. Polpedroth was destroyed by Dobrens and Lunderians during the Energy Weapons War.

Porta-Source, 7: A portable superconducting power source.

power cells, 7: Any small cell that produces power, or the energy cell rated at 500 kilo-joules energy.

Power Plants, 5: Any power producing station.

querrid: Any creature that obtains information for thriddle. Querrids made their first appearance in Ardoth in 3475, when thriddle were permitted back into the capital after the Warp Flash of 3475.

reco a&b, 22-23: Two Bio-Tec life forms with robotic counterparts. They are similar to dogs. Note that Reco 1 and 2 are not described in Earth-Tec Jorune.

Reet: An island located off the north coast of Lusail. The people of T'Sulya are Lelligirian colonists who have long since dropped their allegiance to Lelligire.

Reharvester, 11: A tec-ton used to examine root systems of trees.

Replicin's Kinderpods, 3: The first company to create incupods. Their particular brand name is the "Kinderpod."

rethis, 18,20: Small marsupial-like Bio-Tec creatures that rescue incupod communities.

rocket pack, 16: A small Earth-Tec jet pack.

Ros Crendor: A boccord habitation located north of the Doben-al.

S'sydra: The western half of the Lusail province is referred to as S'sydra by its inhabitants.

S-Pile, 6: A slow, stable energy source.

Sargus Pile, 5-6: An underground power station.

Seco-Ton, 11: A quick tec-ton that can travel through dense terrain.

shantha: The original form of intelligent life on Jorune. Shanthas have no eyes.

Shendarri SkyRealm, The: A SkyRealm located in a valley of the Accaptas Mountain Range.

SkyRealm: A large crystal formation that floats above the surface of Journe balanced by crystal repulsion. See "The SkyRealm Kolivisondra" for details.

sladregs, 23: A form of Bio-Tec life that cleans solar power panels.

Sobayid: One of Burdoth's four provinces.

stunner, 15, Illus. 13: An electrostatic Earth-Tec weapon used to render most life forms temporarily unconsciousness.

Sub-Meson Pile, 6: The most powerful of the Earth-Tec power plant types. It produces energy from muon-catalyzed fusion. These stations are usually located at sea.

Subtronics, 8: Earth's electronics technology in the 22nd century.

Surveyor, 14: Tec-tons that wander Jorune on their eight legs.

Sydra: A city located in Assydre Bay in Lusail. This city was devastated by Gire invaders in 3113 and then scavenged by Lelligirians after the war.

symer, 20: Bio-Tec creatures that catch fish.

T-Pile, 6: Tidal energy generators.

tec-ton: 22nd century robots on Earth were called tec-tons.

thriddle: inquisitive creatures with two eye stalks.

tilon, 21: A Bio-Tec creature that produces a mortar-like substance when squeezed.

tologra, 24: Iscin's last Bio-Tec creature. They are powerful, and quick creatures based upon lions and tigers of Earth.

Trailblazer, 14: An enormous tec-ton that clears pathways.

Trinnus, The East Trinnu Jungle Lands: A large jungle region located to Burdoth's south.

Trojax, 18: Trojillian Hexaflouride, a substance used to induce rapid production of corks from a genon.

Vidrox, 17-18: Any Bio-Tec life that takes the form of an object.

woffen, 24, Illus. 24: One of Iscin's Bio-Tec creatures, this one based upon wolves.